Report of the Working Group
Science and Technology Studies

Working Group Members:
Laura D. Ephraim, Political Science Department
Ezra Feldman, English Department
Bojana Mladenovic, Philosophy Department
Jason J. Storm, Religion Department

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Abstract/ Executive Summary

Few things are as urgent in our present moment as a greater understanding of the interconnections between science, technology, and society. The relationship between these three is at the heart of current debates on the ethics and policy of globalization and sustainability, climate change and climate justice, medicine, vaccination, nuclear proliferation, human-animal relations, artificial intelligence, “big data,” and digital surveillance, to name a few. More generally, understanding the complex interactions between science, technology, and society is crucial to examining how scientific knowledge is produced, what the social effects of various technologies are, and how depictions of science and technology shape public opinion and public life. We envision a college-wide commitment to questions of Science, Technology, and Society. Key steps to pursue this vision include: (1) the creation of a new Center for Science, Technology, and Society, bridging all three divisions and hosting scholars from Williams and other institutions; (2) the creation of a program to facilitate and incentivize inter-divisional faculty engagement with Science, Technology, and Society; and (3) the expansion of the existing Science & Technology Studies Program through the hiring of at least two tenure-track faculty with FTE in STS, as well as regularly staffing visiting positions and post-doctoral positions.

The acronym “STS” will be used throughout this report to name two important, entwined aspects of our initiative (for clarification see Appendix 3):

1. *Science, Technology, and Society*: a broad trans-disciplinary and inter-divisional commitment to examining the relationships between the natural and social sciences, technology, and social formations.

2. *The Science & Technology Studies Program*, which will be underpin many of the Science, Technology, and Society initiatives, and which also encodes specific disciplinary knowledge.
Vision/goals

We stand at a critical juncture in the history of the relationship between the Liberal Arts and techno-scientific education and practice. At Williams, Division III is growing by leaps and bounds as unprecedented numbers of our students choose to take STEM courses and major in STEM fields. In the midst of this boom, the cultural gap between the two sides of Route 2 is unfortunately widening – just as the most important questions of value facing our culture and our campus are inextricably bound up with rapid techno-scientific change. Yet efforts to reflect on the impact of our students’ shift toward the sciences are rare and scattershot on our campus. Despite many important efforts to promote interdisciplinary at Williams, there are very few curricular or co-curricular units or programs that substantively bridge all three Division (the existing Science & Technology Studies Program, along with Public Health, and ENVI being three important exceptions). And we are missing the larger forums needed to fully integrate the intellectual life in DIV III with the other two divisions. We urgently need to remedy this situation: At stake is not just the future of the Liberal Arts, but also the shape of the world-changing scientific and technological work that graduates of Liberal Arts colleges do beyond our campuses.

An education that prepares students well for the world we live in requires a sophisticated understanding of science, technology, and society that must be grounded not just in one discipline but in many, across all three divisions. It is therefore our vision that Williams College take a leading role in educating successive generations of students in STS, equipping them to participate wisely and influentially in these many high-stakes debates. Further, we envision a visible on-campus culture of awareness and concern for STS questions pervading the entire Williams Community, including not only faculty and students but also staff and local community members. To achieve this vision, as explained in more detail below, we propose (1) the creation of a new Center for Science, Technology, and Society; (2) the creation of an incentive program to facilitate inter-divisional faculty engagement with STS; and (3) the expansion of the existing but fragile Science and Technology Studies Program.

Science, Technology, and Society is the beating heart of interdisciplinarity, and it is a “contact language” for scholars in a wide range of fields: by that, we mean that STS enables conversations to span academic silos that they are divided by differences of training, method, pedagogy, and ethical orientation. Crucially, the contact language of STS bridges the College’s three academic strategic initiatives: Technology and the Liberal Arts, International Initiatives, and the Future of the Arts. Almost every significant quandary that confronts governments and citizens in the contemporary global world demands a knowledge of how science, technology, and society fit together. How we use, choose, and understand our techno-scientific practices has powerful implications for how we shape the education we offer, our impacts across national borders, and our arts.

STS also enhances the college’s strategic planning to promote diversity, equity, and inclusion. Science and Technology Studies centers attention on issues of equity and inclusion in scientific disciplines where those questions are not routinely thematized. Study of Science, Technology, and Society can open doors for students who might not otherwise find their way into STEM fields.
In brief, a commitment to the growth of Science, Technology, and Society at Williams would enable the College to take a leading role in some of the most pressing debates of our time. It will help our community illuminate the historical, social, cultural, ethical, aesthetic, and political dimensions of science and technology; it will help us to consider our daily practices responsibly as we choose what to eat, how to dress, how we work, and how we pursue our moral visions and our personal goals.
Description and appraisal

Science & Technology Studies has existed as a concentration for over a decade and has historically been connected with the History of Science Department. With the departure of Don Beaver, that department’s sole faculty member, the status and future direction of STS fell into jeopardy. Following the retirement of Beaver, the STS program at the college dwindled down to a single non-TT affiliate, Grant Shoffstall (a visitor in Sociology), and courses in STS, including the Program’s core courses, were no longer regularly taught. The STS Program still existed on paper, but was effectively moribund.

However, key students and faculty continued to recognize the importance of STS to the College’s mission and began organizing to bring the Program back to life. Shoffstall -- on the request of his students -- began offering STS 101, Introduction to Science & Technology Studies. The response was overwhelmingly enthusiastic, as reflected in increasing enrollments, high student satisfaction, and a number of students seeking to declare a concentration in STS (Shoffstall added a senior seminar to his offerings to accommodate these students, even generously teaching it as an overage). Shoffstall’s students organized a letter-writing campaign to urge the College to bolster the position of STS at Williams, and the Dean of the Faculty asked the CPC to study the future of the program. The Working Group organized by the CPC unanimously recommended that “STS should continue to exist as a concentration” at Williams. To ensure the future of the concentration, the Working Group deemed it necessary for the STS Program’s advisory board to be reorganized and for the college to invest in two tenure-stream appointments with half each in STS. The report concluded by noting that the “concerted effort” required to revitalize the Program “would be well worth it, for the reward will be opportunities for Williams students and faculty to participate in [a] field that is taking on some of the most important issues of our time” (see CPC report, 1/31/18, Appendix 4).

In the two years since the CPC Working Group made these recommendations, a devoted and growing core of faculty has collaborated to stabilize the STS program and enhance its visibility on campus. In July 2018, Jason Storm took over as Chair of STS, recruited a group of faculty affiliates (increasing the affiliated faculty from 1 to 23), and even more importantly organized an engaged and committed advisory board. With the able assistance of this new advisory board, Storm was able to (1) create a new webpage for the program; (2) engage an administrative assistant; (3) oversee a curricular review of the program leading to new concentration requirements (which were navigated through committee); (4) radically expand the number of cross-listed courses; (5) increase the program budget; (6) gain permission to hire a Melon postdoctoral fellow; and (7) gain permission to organize a C3 symposium. Storm handed chairing over to Laura Ephraim in July 2019 and under her leadership the board was able to organize a very successful and inclusive symposium and initiate a postdoc search. A group of STS students also organized themselves to promote the visibility of the concentration on campus.

The STS program is therefore poised to take on a leading role in the set of initiatives proposed here. Its visibility on campus is growing as more students and more faculty encounter the discipline of STS and recognize its centrality to achieving a true liberal arts education at this historical moment.
Strategies

How we use, choose, and understand our techno-scientific practices has powerful implications for how we shape our knowledge-production and acquisition, our planet, our arts, and our daily practices as we choose what to eat, how to dress, how we work, and how we seek to satisfy both our moral drives and our drives for leisure and pleasure.

We imagine that in 10 years, students will arrive at Williams college with the expectation that they will discover the imbrication, the interleaving, of the major divisions of study: how the cultures that they study in Div. 2 and Div. 1 have shaped the scientific studies pursued in Div. 3 and the technological infrastructures they encounter both on campus in the wider world -- and, alongside this, how sciences’ practice and the histories and presences of technological change have, in turn, shaped the culture(s) that surround us and with which we affiliate – including on questions of equality, the environment, politics, economics, and the arts.

To meet these needs, we propose three actions:

1. The creation of a new Center for Science, Technology, and Society.
   a. Explanation: When the Oakley Center was first created it was chartered with providing a forum for dialogue between DIV I and DIV II faculty. DIV III was omitted. Its format of reading groups and discussion seminars is appropriate to DIV I and II, but less relevant to DIV III. It is clear that different ways of sharing make sense for different disciplinary frameworks.
   b. While we don’t want to over-determine the possible models of this new center (and it needn’t be a new physical space), we imagine that it would include forums for skill-to-skill training or knowledge transfer intended to bridge DIV I/II to DIV III and vice versa. Examples might include a special faculty-to-faculty course intended to teach DIV I/II how do digital humanities or data science research; a small workshop in which historians coordinate with scientists to research the history of a scientific subject; or a forum for collaborative research projects and collaborative arts projects that bridge the Route 2 divide.
   c. Another possibility might be to have the center host a pre-doc/post-doc fellowship program like the Bolin program to bring graduate students (perhaps from minoritized backgrounds) working on the interface between science, technology, and a DIV I or DIV II discipline.
   d. We also imagine this center would invite speakers and produce the infrastructure to host a series of important public conversations about topics such as: How might we further transcend and cross-cut our disciplinary silos? How might we encourage more reflexivity about what counts as science and what is at stake in defining things as sciences? How could we better think about how technology structures our lives? Why do our divisions exist? And should they continue to do so?
   e. We also wonder what an STS orientation program, hosted by the center, might look like; how the center might guide affiliated students in their choice of majors; and whether there might be support, eventually, for STS language in course catalog and curricular requirement in STS comparable to the DPE.
2. The creation of an Incentive Program to facilitate (1) Division III faculty teaching courses related to the historical, philosophical, or social impact of their area of specialization; and (2) DIV I/II faculty with relevant expertise teaching courses related to science or technology. This might also take the form of faculty teaching in areas relating to their existing expertise or collaborative teaching between Division III faculty and Division I/II faculty.
   a. Explanation: Many (esp. Division III) faculty have expressed interest in teaching courses on the histories or social embeddedness of their disciplines. Departments need incentives and resources to maintain their necessary offerings while allowing faculty with interdisciplinary interests to teach courses that would be cross-listed with STS.

3. The Expansion of the existing but fragile Science and Technology Studies Program:
   a. Explanation: A working group constituted by the Curricular Planning Committee in Fall 2017 recognized the advantages of the STS program in bridging these issues when issuing its recommendation that the existing Science and Technology Studies Program be revived from the state of “benign neglect” created by the departure of its sole faculty member, Don Beaver, from the college. The working group’s report notes strong student and faculty interest in STS despite unstable staffing for the concentration’s core courses (currently taught by a visitor, Grant Shoffstall) and until very recently, an effectively moribund advisory committee. The advisory committee has now been reconstituted and its members have taken steps to revise the concentration, raise its profile, and expand its array of electives. In this we are taking a broad umbrella approach to the discipline including history of science, sociology of knowledge, philosophy of science, the economics of research and development; science and public policy; technology and the environment; scientometrics; artistic depictions of science, and other approaches (link). But new resources are needed to carry forward these promising beginnings, build on the considerable existing interest and expertise in STS among our students and faculty, and enable the program to thrive.
   b. To put STS on firmer grounds, we suggest the creation of at least three new tenure track lines, each one a potential joint appointment between STS and a unit from each of the three college divisions. This way of staffing STS would strengthen our current offerings and the offerings of home departments, and it would foster strong intellectual and structural bonds among all three divisions.
   c. An expanded STS would provide a forum to cross-list the courses discussed above.
Appendix 1: Methods and outreach
As discussed above, there has been an extended effort to revive STS since Don Beaver’s retirement left the program in limbo. In fall 2017, the Curricular Planning Committee at the request of the Dean of the Faculty, formed a working group to look at the Science and Technology Studies concentration. This group met with multiple faculty and students across the college and issued a report including recommendations in January 2018 (see appendix 4). Laura Martin surveyed our peer institutions and composed a report on their STS efforts (see appendix 5).

In July 2018, Jason Storm took over as Chair of STS and recruited a group of faculty affiliates and composed an advisory board. The advisory board came together to make a series of recommendations including a revision of the curriculum and a TT request. Moreover, a new student group “STAC” was formed. The students put together a proposal/statement on visibility. Since, the strategic planning charge the advisory board has met regularly to craft this language. Storm also attended meetings of the broader Technology and the Liberal Arts group. Laura Ephraim and Bojana Mladenovic also met with various strategic planning groups. We also met with faculty (especially in Division III) to talk about how we could meet joint needs.
Appendix 2: The Floating Ampersand: ST&S / S&TS

In the course of envisioning how STS will take shape at Williams over the next several years, we have taken guidance from the attached essay by Sheila Jasanoff, “The Floating Ampersand: STS Past and STS to Come,” *Engaging Science, Technology, and Society* 2 (2016): 227-237. In brief, the essay offers a concise overview of two related though distinct interdisciplinary research programs, each of which travels under the abbreviation “STS.” On the one side, scholarship in science, technology, & society takes as its primary focus the “external relations” of science and technology to the range of social institutions, e.g. from medicine and agriculture to higher education and religion. On the other side, science & technology studies sets out to analyze science and technology themselves as social institutions. In other words, if STS in the former sense takes up the social implications of science and technological innovation, STS in the latter sense conducts focused empirical studies of science and technology as historically-situated social activities.

Following Jasanoff, we think the initiative at Williams should be called Science, Technology, and Society, because it is a) the broader of the two STS streams, b) provides unity for STS at Williams in terms of subject matter (i.e., science, technology, and society), and thus c) signals a commitment to including the broadest possible range of voices from across the three divisions. That is to say, a big tent. Anyone who studies or is interested in some or another dimension of science and technology as it relates to some or another social institution is invited to play in our big tent.

The program will retain the more narrowly titled “Science & Technology Studies” to signal its particular disciplinary formation. In terms of core course offerings and setting curricular priorities, however, within the space defined as science, technology, & society, science & technology studies will figure prominently. That is to say, in terms of prioritizing theory and methods employed in the empirical study of science and technology as social institutions.

Thus, we seek to conserve and exploit, not resolve, the ambiguity that the “floating ampersand” introduces to “STS.”
The Floating Ampersand: STS Past and STS to Come

SHEILA JASANOFF
HARVARD UNIVERSITY

Abstract
STS has become a discipline in the sense that it offers new ways to read and make sense of the world. It remains an amalgam, however, of two linked yet separate lines of inquiry, both abbreviated as STS. Science and technology studies refers to the investigation of S&T as social institutions; science, technology and society, by contrast, analyzes the external relations of S&T with other institutions, such as law or politics. This essay reflects on the implications of this ambiguity for institutionalizing STS as a field of its own, drawing on the author’s experiences in building STS at two universities.

Keywords
science and technology studies; institutionalization; disciplines; interdisciplinarity

Introduction
Human beings are given to redescribing their world. The greatest achievements of human creativity—in art, in literature, and in the sciences—come from just that urge to reread and rewrite experience. My own history of working in and helping to shape Science and Technology Studies (STS) has long been an exercise in rereading and rewriting texts, contexts, and practices—an experience marked and bracketed by what I call here “the floating ampersand,” that is, the “and” that connects the three letters in the abbreviation STS. This is a brief, very personal account of the development of STS as I have observed and participated in it for an academic lifetime, in more or less close conversation with sociologists. I hope to convey a sense of what I see as important in STS’s emergence, and how the field as I know it relates to the ways of exploring science, technology, and knowledge that shelter comfortably under SKAT’s big tent.

Sheila Jasanoff, Email: sheila_jasanoff@harvard.edu
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Sightlines
The arts have routinely drawn inspiration from new sightlines that turn the familiar world into a place of mystery or spectacle. In October 1816, the twenty-one-year-old John Keats sat with his friend Charles Cowden Clarke and read with growing excitement George Chapman’s seventeenth century translation of Homer’s *Odyssey*. Before that encounter, Keats must have known Homer only through Alexander Pope’s 1726 translation. The two versions were markedly unlike: Pope’s regular and rhythmic, in rhymed couplets; Chapman’s harsher, more dramatic, and more visual. The passage that gripped Keats, in Clarke’s recollection, explains the young poet’s reaction. In Book V, Odysseus is cast ashore after a storm. Pope says:

That moment, fainting as he touch’d the shore,
He dropp’d his sinewy arms: his knees no more
Perform’d their office, or his weight upheld:
His swoln heart heaved; his bloated body swell’d:
From mouth and nose the briny torrent ran;
And lost in lassitude lay all the man,
Deprived of voice, of motion, and of breath;
The soul scarce waking in the arms of death.

Chapman renders the same scene so:

Then forth he came, his both knees falt’ring, both
His strong hands hanging down, and all with froth
His cheeks and nostrils flowing, voice and breath
Spent to all use, and down he sunk to death.
The sea had soak’d his heart through; all his veins
His toils had rack’d t’a labouring woman’s pains.
Dead weary was he.

We know from Clarke’s account that Keats was especially struck by the line, “The sea had soak’d his heart through,” for which there is apparently no basis in the original text. And yet this reading, in its monosyllabic directness and stark, emotive appeal, fired Keats to his own act of creation. The very next morning he sent his friend a sonnet that found its way into the canon of English literature, *On First Looking into Chapman’s Homer*. From its immortal opening line, “Much have I travell’d in the realms of gold,” the sonnet offered its own magical, fourteen-line remix of science, music, and travel fantasy. Chapman’s Homer is largely lost to modern readers, but in Keats’ sonnet the echoes of the old translation remain and breathe.

For Keats, a radical rereading of a familiar text was a spur to poetic invention. For social scientists, too, new readings of the human condition open up remarkable possibilities for understanding, explanation and critique, most especially perhaps when the readings come from
outside the comfort zones of the theory-bound safe enclaves of disciplinary normal science. The theme for this collection—“Positioning the Field: STS Futures”—invites us to celebrate one such new way of reading and looking, a way that, in its turn, has provided the scaffolding for a disciplined scholarly tradition. That lens is STS.

It is not entirely far-fetched to liken STS’s readings of the world to Chapman’s reading of Odysseus cast ashore. There is across all of STS the same eschewing of given-in-advance tradition (for example, Pope’s heroic couplets), the same minute attention to observed phenomena (“froth” on cheek and nostrils, not Pope’s more literary “briny torrents”), even a textually unwarranted grant of agency to a non-human thing (the sea). Through close observation, STS perspectives have revealed unexpected openness and plasticity in the world we inhabit, in which we form our selves and organize our collectives, and which we continually remake with the products of our dexterity and experimentation. STS at its best is a key that makes black boxes spring open (Bijker et al. 1987), brings into view the intricate interplay of nature and culture (Latour 1987), and reveals the hidden intertwining of knowledge, identity, and norms (Jasanoff 2004).

Setting STS beside older and still current sociologies of knowledge, moreover, demonstrates why disciplinary speciation is never a zero sum game. The arrival of the new augments the old but does not lessen it. Feminism, postcolonialism and subaltern studies taught us new ways to think about power and its evolution from neglected sociopolitical points of view. They did not negate Marx’s theories of labor and capital, nor Durkheim’s understandings of social norms, nor Weber’s insights into bureaucracy. A similar expansion of intellectual horizons, permitting new questions to be asked and new interpretive frameworks to be developed, has been my experience in STS. Doing STS does not, for me, deny the role of social groups, political movements, or cultural communities; it does enable new ways of querying how knowledge and belief are constructed, proof and evidence validated, meaning conferred on inanimate things, and material objects made to function in harmony with human bodies and collectives. Put differently, STS provides a distinctive gaze on modernity, and it does so by problematizing the productions of science (or, more broadly, knowledge) and technology in ways that complement the work of other disciplines without diminishing their contributions to social theory.

Science and Society: Bridging the Gap

STS’s position in the social sciences today reflects its own complex and multiple origins in the interstices of anthropology, history, sociology, and politics—and, of course, science and technology (S&T). In the United States, politics came first. Despite the first “s” of the abbreviation, American STS at first had relatively little to do with science as such. Pedagogically, the evolution of scientific ideas had already been committed to history of science, a specialty that took shape after World War II and was, by the 1960s, installed in many American universities as a special field within history departments or, in some cases, as a department of its own. As captured in the popular survey course title “from Plato to NATO,” history of science offered

1 Notable examples include Harvard, Wisconsin, and the University of Cambridge (UK).
students a relatively straightforward tale of progressive enlightenment, in which quixotic and partial ideas ceded ground over time, or sometimes achieved added solidity, by accommodating the results of ongoing experiment and observation. As the history of science matured, its storytelling grew more complex, exploring how ideas and modes of inquiry are embedded in social and cultural contexts. Practitioners began speaking of a transition from internalist to social histories of science. But the origin and transmission of scientific beliefs and practices remained central to the field, and to a large extent still are its primary concerns. STS, by contrast, queried the relationship between the texts of science and their sociopolitical contexts with significantly different objectives. STS sought to trace not only how ideas and their applications change but, importantly and symmetrically, how those changes transform the worlds out of which they originate and in which they have effects.

Historically, STS came to stand for two quite different things, distinguished by the position of the word “and”: both “science, technology and society” and “science and technology studies.” That ambiguity initially helped STS to become a recognized field, accepted by many natural scientists and engineers, although it may have hurt STS’s longer-term institutionalization within contemporary research universities. But before turning to STS’s prospects in this century it would help to recall some salient aspects of the field’s evolution in the preceding fifty years.

American universities, to begin with, embraced the version of STS that puts the “and” between the T and the second S that stands for society. The aim of STS, so conceived, was to make explicit how the pursuit of S&T affects society and social order. Pressing public concerns of the time challenged any straightforward equating of progress with advances in science and technology. Many troublesome things were going on in the world, compromising humanity’s safety and well-being, and most were connected in one way or another to scientific and technological developments. This was the decade of Rachel Carson, Vietnam and Napalm, the Cuban missile crisis, the space race, the Apollo missions, and eventually the moon landing. The Cold War was at its height, with the looming threat of nuclear catastrophe. It was also the first decade of postwar feminism, along with (in the United States) antiwar and civil rights activism, as well as the rise of a new American environmentalism to fight the destructive effects of human habitation on Earth. Climate change was not yet on the horizon, let alone the discourse of the anthropocene, but more immediate hazards were: choking air, rivers on fire, pesticides in human breast milk, nuclear power plants generating unmanageable radioactive wastes, and the sprawl

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Famous cases of theories solidifying over time include plate tectonics, explaining continental drift, and the theory of evolution. A recent example of this way of narrating scientific history is the detection of gravitational waves in early 2016. Dennis Overbye writes: “More generally, it means that a century of innovation, testing, questioning and plain hard work after Einstein imagined it on paper, scientists have finally tapped into the deepest register of physical reality, where the weirdest and wildest implications of Einstein’s universe become manifest.” Overbye, “Gravitational Waves Detected, Confirming Einstein’s Theory,” New York Times, February 11, 2016. STS scholars might have been inclined to tap more deeply into the register of “plain hard work.”

One disciplinary practice underscores this tendency: appointments in history of science are still defined largely in terms of particular scientific disciplines (e.g., physics, biology, medicine) and their location within specific historical periods, usually a century. STS by contrast is more eclectic, embracing more complex topics, such as innovation, as well as theoretical perspectives, geographical regions, and social transformations. STS-trained Ph.D.’s correspondingly find jobs in many fields, including but not limited to sociology.
of cement and cars, malls and runways into formerly green areas, where loss of birdsong was not the only calamity that made people afraid.

Accepting the crucial role of S&T in modern life—indeed scientists and engineers were among the first to endorse the need for STS—early STS research often sought to combat alliances between S&T and regressive forces in society. Academic programs were formed to raise students’ awareness of the need for greater responsibility in the uses and applications of science. Important among these was the Program on Science, Technology and Society at Cornell University, founded in 1969 by three prominent scientists and a philosopher. Curiously, a program focusing on science’s social implications initially failed to attract the attention of social scientists. My own career in STS began in that program, almost a decade after its formation, in 1978.

At Cornell, as elsewhere in America, STS was not especially concerned with the rise or spread of scientific ideas, the nature of scientific practices, or the construction of truth claims within science. Instead, it focused almost exclusively on the politics of technology, thereby unconsciously reinscribing the classic narrative of impure motives of power and dominance corrupting the purity of science. One strand of that story concerned the forces of industrialization and militarization that pull science away from the Mertonian virtues of disinterestedness and communalism (Merton 1973; also Winner 1986). Another focused more on heedlessness and hubris in the applications of science, especially on the part of profit-hungry corporations that failed to acknowledge uncertainty and risk in connection with technologies such as nuclear power, agricultural chemicals, pharmaceuticals, and eventually biotechnologies. A strong subtext was the need for scientists and citizens to become more vigilant about the bending of science to serve malign purposes. Prominent scientists lent their prestige to this endeavor. At Cornell, Hans Bethe, a Nobel Laureate and hallowed figure in the university’s postwar constellation of eminent physicists, strongly advocated for nuclear arms control, although he also firmly supported the development of nuclear power. The chemist Franklin Long, chief architect of Cornell’s STS Program, shared Bethe’s passion for disarmament. Long’s legacies included not just STS but also the Peace Studies Program, later named for his protégée Judith Reppy.

Reflecting these and other normative orientations, American STS of the 1970s and 1980s was broadly configured as a space for research and teaching to illuminate the social and political implications of society’s technological choices and thereby improve the politics of technical decisions. At Cornell, Dorothy Nelkin, hired by the STS Program’s founders to investigate problems they themselves had little time to explore, pioneered a genre of research that took social conflicts as its main site of investigation and case studies as its chief methodology. In a series of edited volumes called simply Controversy, Nelkin pulled together studies of major American technological disputes of the moment. The first collection, published in 1979, included chapters on nuclear waste disposal, air bags, vinyl chloride in the workplace, fetal research, and Creation versus evolution in the schools (Nelkin 1979). Only the last focused on science, not technology.

The term “interpretive flexibility” was not yet current in American STS talk, but awareness of it featured centrally in STS case studies, since actors in each story assigned different readings to the same observations. Case after case documented that where one stands in society affects what one sees of the world during a controversy, and that those with more power to shape
the dominant sightlines typically win the day. These were examples of a weak social constructivism, not questioning a common background reality, but suggesting that social identities and affiliations determine how facts are constituted in public domains. Not surprisingly, given the explanatory power accorded to social categories, the contributors to Nelkin’s controversy volumes included many sociologists. Early in my involvement with STS these were the scholars I interacted with most closely. The group included Daryl Chubin, Susan Cozzens, Thomas Gieryn, Edward Hackett, Gerald Markle, and James Petersen, among others. Nelkin herself had never undertaken doctoral study in any field, but she came to be regarded as a sociologist and finished her career as a distinguished professor in that field at New York University.

The epistemological and metaphysical questions that we view today as central to STS were germinating not at Cornell or MIT or Harvard but primarily on the other side of the Atlantic. In Edinburgh, for example, the focus of the Science Studies Unit, inspired by David Bloor’s “strong programme” (Bloor 1976), was primarily on science: no need here for any “and,” because technology, to start with, was not in the picture at all. Around the same time, Bruno Latour and Steve Woolgar were conducting the ethnographic research that led to *Laboratory Life* (Latour and Woolgar 1979), the first major STS lab study. These European scholars asked how best to understand the problems that had long preoccupied philosophers about the nature of facts and truth. A sociological method did develop in the Edinburgh School, but this was largely a sociology of scientists engaged in rival projects of knowledge making—not, as in America, a sociology of society’s engagement with the migration of science from labs into technologies. Edinburgh case studies, consequently, were as often historical as contemporary (Shapin and Schaffer 1985; Shapin 1994). Even influential works that queried how technologies develop from science (MacKenzie 1990)—or how facts become artifacts (Bijker et al. 1987)—stayed closely attuned to the dynamics of scientific (and later technological) practice, above all the practices of verification, rather than to the practices of other social institutions such as the law that also shape technologies, let alone to the wider movements of power, knowledge, values or imaginaries within society.

Relations between STS and sociology proved harder to negotiate and stabilize than creating something new named STS. At Cornell, the chair of the Sociology Department participated in the first search we ran for a senior position in STS, in 1989. When that search failed, Sociology no longer wished to be involved in a second (successful) one, and efforts to gain a joint appointment for STS’s actual hire, Trevor Pinch, initially failed. The STS Handbook that I co-edited for the Society for Social Studies of Science (4S) (Jasanoff et al. 1995) at about the same time engendered additional frictions between the editorial team and leading figures in American sociology. Open solicitation for prospective authors elicited a list that overwhelmingly favored the newer constructivist approaches over the sociology of knowledge that had been prevalent in

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1 Many years later Cornell’s Sociology Department did offer Pinch a joint appointment, a courtesy not extended to every sociologist in S&TS. Graduates of the S&TS Department, however, have been appointed in leading US sociology departments.
the United States (for possible reasons, see Kuklick 1983), and the older school never quite forgave the upstart field.

Gradually, however, a new intellectual frontier emerged—science and technology studies—signaling with its relocated “and” that the objects under the investigative lens were S&T in themselves, as institutions and practices deserving analysis by social scientists with all of the methods at their disposal. This STS became the umbrella under which the more academically oriented programs, often those offering graduate degrees or certificates, began grouping themselves by the early 1990s. A non-exhaustive list of US science and technology studies programs includes Brown (undergraduate degree), Cornell, UC Berkeley, UC San Diego and Wisconsin-Madison. Stanford, where STS won new popularity with the increasing economic clout of Silicon Valley, retained the name “science, technology and society” for its undergraduate major. MIT’s program, which also keeps that name, offers a doctoral degree (HASTS) that combines history and anthropology with STS.

At Cornell, it was the birth of a new department of Science and Technology Studies in 1991 that triggered a renaming and a formal displacement of the ampersand, in a move that was at once reflexive and political. Merging the precursor programs on STS and the History and Philosophy of S&T, the department included historians and philosophers who did not wish to identify with a politically inflected STS that they found alien, perhaps alienating. In the time-honored style of American politics, we found a compromise: the newly repositioned “and” was inserted into both the department’s abbreviated name (S&TS) and its logo, which initially consisted of STS written in bold letters across a large, greyed-out ampersand in the background. But the more important feature of the compromise was a tacit recognition that S&TS faculty were held together more by the subject matter they studied than how exactly they chose to study it.

Symbolic action helped to weld together a faculty at Cornell that at first had little in common but eventually came together harmoniously to work on the routines of academic life, from grant applications to designing a new core curriculum for Ph.D. students. It helped, no doubt, that several members of the department had already collaborated on a major training grant from the National Science Foundation that provided the impetus for the department’s creation. For several of us, however, the adventure of the floating ampersand prompted its own deeper reflection on the connections between S&T and society and eventually pointed the way toward a stronger conceptual synthesis among varied STS traditions. This was the experience I brought to Harvard when I moved here, and it guided, and still guides, my sense of the challenges and opportunities confronting STS in this new century.

Too Big a Tent?
The last chapter in this short reflection has been written at Harvard, where I joined the John F. Kennedy School of Government in 1998 and established a new STS Program in 2002. As if winding the clock back, I chose to name this program “science, technology and society” (while

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1 For an overview of the Harvard STS Program, see http://sts.hks.harvard.edu/.
retaining “science and technology studies” for my own professorial title). This move was wholly intentional, in order to include in the STS tent the scientists and engineers who, as at Cornell, firmly supported the idea of a field centrally concerned with S&T’s challenges to society. The rubric also embraced colleagues from other fields, including sociology and anthropology, who do not see themselves as doing S&TS (science and technology studies) but still are deeply interested in ST&S (science, technology and society). Nearly fifteen years after the Harvard program’s foundation, the risks and benefits of the floating ampersand can begin to be assessed, and they speak in some sense to the future of STS as an academic “field of its own” (Jasanoff 2010). I offer a brief evaluation under three headings—inclusiveness, coherence, and impact—before hazarding a few thoughts in conclusion.

Publicly, the STS Program at Harvard capitalized on an inclusive vision of S&TS that does not insist on disciplinary purity but acknowledges (as SKAT also does) that there are multiple ways to look at the place of S&T in society. Inclusiveness brings tangible rewards. The program’s weekly colloquium series is popular with audiences across Harvard, its public events draw large and varied crowds, and its website and social media presence attract thousands of visitors on a regular basis. The term “STS,” virtually unknown when I came to Harvard, now enjoys wide name recognition, and it is a space that many regard as desirable to be seen in.

Yet, visibility and appeal arguably came at the price of intellectual coherence, at least on an institutional level. An STS that offers all things to all people can be left at day’s end with few resources to call its own, and none distinctive enough to justify claims for the kind of support and recognition claimed by traditional disciplines (Hilgartner 2003). At Harvard, as of this writing, efforts to build disciplinary coherence through doctoral training, dedicated appointments, and programmatic support have failed to win high-level administrative approval despite increasing demand from below and from the world at large. Too many competing interests are able to claim the territory in which S&T connect to society only through an ill-defined “and.” To the untutored eyes of university cost-cutters it looks as though there are enough places and people engaged in what some administrators loosely label as “science, technology and society studies.” Why then bother to invest resources in a space marked STS that is not a discipline?

The answer, of course, goes back to sightlines and the opening up of new perspectives. These are the dimensions on which an STS enterprise standing resolutely outside of disciplinary power structures can achieve, indeed is achieving, impact of a kind that might be the envy of better established fields. It has become clear over the past few decades that STS is a generative place, with spin-offs that matter not only to the social sciences and humanities—important as these are—but also to the work of professionals, policy makers, and citizens who hope to make beneficial changes in the world. In these respects, STS offers some of the creative force of rereading modernity that Keats discovered in, for him, a novel translation of the classics. STS enables people not only to re-represent the world but to intervene in its freshly discovered inner workings. I will close with a reflection on that horizon of promise.

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Remaking Science, Technology and Society
A dozen years ago, Stephen Hilgartner (2003) proposed a series of strategic steps to move STS up the gradient of academic institutionalization. Those prescriptions, coming from an eminent sociologist of knowledge and organizations, still stand as a valuable template for anyone interested in the field’s wider diffusion through a skilled labor force. One could question the metaphor of a gradient as perhaps too linear, suggesting that there is a single direction (“up”) and a straightforward progression from one position to the next on the way to more secure institutionalization. Hilgartner describes three current organizational formats for STS—subfield, interdiscipline, new discipline—that differ from one another in the degree of autonomy granted to STS to develop its own curricula, teach its own canon, and develop its own brand of professional identity within the ecology of existing disciplines. In his telling, these formats represent almost a continuum along which STS, as an “emerging discipline,” should seek to progress, although he recognizes that the context for STS will vary across institutions, and that local variability must be respected if attempts to strengthen STS are to succeed. Inserting an undergraduate STS curriculum into a liberal arts college, for example, presents different, perhaps lower, entry barriers than creating a new STS doctoral program at a research university, where disciplines often jealously guard the door against new entrants. My own experiences in building STS at two leading universities, Cornell and Harvard, attest to the lack of any reliable formula for how to make this happen, or even any guarantee that STS will “take” when grafted onto different parent trees.

Nonetheless, Hilgartner’s reasons for STS to seek stronger institutional moorings for its own teaching and training efforts remain as compelling as when they were articulated in 2003. The distinctive questions STS scholars ask, the methods they use to advance their inquiries, and the findings from more than a generation of research all need to be imparted systematically in order to grow and develop the field. There is simply no substitute for rigorous academic training and the sense of intellectual identity, authority, and community it confers. Institutional infrastructures are important because they support the thought collectives needed to validate new ways of looking at and describing the world. Professional society sections such as SKAT, or the Science and Democracy Network that I have been privileged to help build, are a necessary component of such infrastructures. Complementing the work of academic departments, these regular meeting points provide invaluable additional spaces in which cross-talk among self-identified STS scholars, sociologists, and participants from other disciplines can flourish at growing levels of sophistication, to the benefit of all.

But there is a parallel strategy that also needs pursuing, one more consistent with STS’s disruptive tendencies as the field that explores the foundations of knowledge and hence makes the expert-dominated structures of modernity less comfortable. This is to take the “and” seriously: not only as an object of sustained critical inquiry but as an instrument to reconnect STS to society—to press into the domains where the designers of the future operate, in law, policy, architecture, engineering, theater, music and the arts, and not least citizen movements. It is to use
the analytic keys of STS to open up the visions of all the knowledge-workers of the world (and that is a great many of us) to new possibilities for pulling apart the stubborn, material structures of power and putting them back together into constructs as yet unimagined. In my own work, I have used such devices as amicus briefs, cross-disciplinary co-teaching, web-based teaching tools, summer schools, and professional training programs to disseminate STS perspectives to people in worlds of action not constrained by the rigidities of the modern research university. Others more adept with today’s digital media will find far more creative ways of intervening, of that I am sure. All one needs is that first baby step into STS, the radical, critical move that asks, “Why is it so, and must it be?” The stakes? Not only are there unsung sonnets locked up in each of us, but epics waiting to be written collectively.

References


\footnote{For example, see the research platform on “sociotechnical imaginaries,” \url{http://sts.hks.harvard.edu/research/platforms/imaginaries/}.}


Science and Technology Studies Working Group Report
January 31, 2018

I. Working group

The Curricular Planning Committee (CPC), at the request of the Dean of the Faculty, formed a working group in the fall of 2017 to look at the Science and Technology Studies concentration (STS). The working group has been co-chaired by CPC members Jeannie Albrecht (Computer Science) and Christopher Nugent (Chinese) and consisted of the following faculty:
Lois Banta (Biology)
Joseph Cruz (Philosophy)
Laura Ephraim (Political Science)
Catherine Howe (Art)
Laura Martin (Environmental Studies)
James Nolan (Sociology)
Jason Storm (Religion)
The working group met on its own a number of times and also held two meetings with other faculty, both regular and visiting, to get a sense of how STS has been functioning at the college and the nature of the field in general.

II. State of STS at the College

STS has existed as a concentration for over a decade and has historically been connected with the History of Science Department. With the departure of Don Beaver, that department's sole faculty member, the status and future direction of STS are unclear. Professor of Philosophy Joseph Cruz has most recently served as the chair of the concentration and has worked at keeping it up-to-date. There is an advisory committee of five additional faculty members, but they seem to have rarely if ever met and only one of them responded to emails inviting them to participate in our discussions.

While the number of concentrators has historically been low—only seven over the last decade—it has increased in recent years with the addition of courses taught by Grant Shoffstall, Visiting Assistant Professor of Sociology. Professor Shoffstall has been teaching the gateway course (SCST 101), the Senior Seminar (SCST 401), and a number of electives. He has generously
taught the Senior Seminar as an overload. General student interest in the field, as demonstrated by enrollments in the gateway course and many electives, is strong and consistent.

III. Recommendations

A. Status of STS

The most basic question the working group asked was whether or not STS should continue to exist as a concentration. Our unanimous conclusion is that yes, it should. Key reasons include the following:

1. Student interest: Enrollments in STS courses are strong and students have regularly approached Professor Cruz and others to express interest. Related speakers such as Nicholas Carr have attracted large crowds (of both students and faculty).

2. Faculty interest: The number of regular and visiting faculty regularly teaching courses in STS (some listed within the concentration, some not) has increased in recent years and the Oakley Center has held a number of well-attended events focused on the field.

3. Interdisciplinarity: STS as a field is inherently interdisciplinary and encourages intellectual connections and dialogue among all three divisions at the College, among both students and faculty.

4. Contemporary relevance: Science and technology arguably dominate our personal and professional lives to a greater extent than in any previous period. Questions of the impact of everything from biotechnology to online social media are at the forefront of news and public debate on a daily basis.

5. Peer institutions: Our peer institutions have a range of similar programs, many with both majors and minors. Laura Martin has put together an excellent summary that we can make available.

6. Precedent: The STS concentration already exists. The working group is not recommending the creation of an entirely new unit.

B. Functional requirements

While the STS concentration already exists, it has fallen into a state of benign neglect. To revitalize the concentration so that it may play its proper role at the college will require attention in a number of areas.

1. Administrative structure and location: The concentration should have a chair and advisory board with five to seven members (including the chair) who are willing to put consistent effort into maintaining the concentration. All of the members should be faculty who regularly contribute courses to the concentration (which is not currently the case) and are willing to take on such duties as student advising and seeking out and reviewing cross-listings. While STS is currently housed in Div. III due to its past connection with the History of
Science Department (which, oddly, is also in Div. III), it would make more sense to have it explicitly affiliated with all three divisions. Ideally, the advisory board would also include faculty from all three divisions. Faculty who have expressed interest in working with the STS concentration but who were not members of the working group include the following:
Les Beldo, Environmental Studies (visitor)
Ezra Feldman, English (visitor)
Antonia Foias, Anthropology and Sociology
Nick Howe, Environmental Studies
Iris Howley, Computer Science
Bill Jannen, Computer Science
Pia Kohler, Environmental Studies
Bojana Mladenovic, Philosophy
Grant Shoffstall, Sociology (visitor)
Fred Strauch, Physics

2. Courses: At an absolute minimum the concentration must be able to staff and offer SCST 101 and 401 every year. To do so it is important to have a rotating set of faculty both willing and able to teach these classes. Many electives are currently being offered (see the Course Catalog for a full list), but they need to be better organized in terms of their roles within the concentration. It is also crucial that the advisory board make sure that all relevant electives are included in the concentrations listings.

3. Staffing: To maintain and grow the concentration appropriately will require two tenure-stream appointments with half of each in STS. It is crucial that the concentration have tenure-stream faculty dedicated to teaching its required and elective courses. These appointments should include a contractual commitment to STS, so that it does not get neglected because of the faculty members’ commitments to other units. Anthropology and Sociology is an obvious fit for one such split position; History, American Studies, English, Religion, and Psychology are possibilities as well. Beyond this, there should be a list of dedicated affiliated faculty who are willing to make some level of commitment to the concentration. Based on the responses we received to our invitations to faculty to meet with the working group, a critical mass of such faculty seems to exist. If there is ultimately a search for one or more positions partially in STS, we suggest the Dean of the Faculty involve the STS advisory board in some appropriate way.

C. History of Science
STS technically has no official relationship to the History of Science Department, though in the past they were, as a matter of practice, connected by Professor Beaver’s leadership of both. With this departure, History of Science currently has no faculty and exists only as an outdated website. Intellectually, it makes more sense for History of Science to be a subfield of STS. Administratively, it is problematic to have a department on the books with no faculty. We would suggest that the CEA look into this, but as an issue separate from that of the status and future of STS. For the time being, removing the History of Science Department’s obsolete web presence and replacing it with a link to the STS webpage (which itself needs to be updated) would be advisable.
Conclusion
Science and Technology Studies has great potential to play a vibrant and important intellectual and academic role at the college. For it to do so, however, will required concerted effort on the part of both faculty and administration. In the opinion of this working group, this effort would be well worth it, for the reward will be opportunities for Williams students and faculty to participate in field that is taking on some of the most important issues of our time.
## Selection of Undergrad STS Programs

*Prepared by: Laura Martin (ljm4@williams.edu)*

*Fall 2017*

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Science, Technology, and Society (STS) is an exciting interdisciplinary field of study grounded in the history, philosophy, anthropology, and sociology of science and technology. It examines deep cultural roots of our technoscientific society and addresses pressing public policy issues. It constitutes a fundamental aspect of a liberal arts education and is excellent preparation for graduate study or future employment opportunities.

Science and technology have become increasingly important components of our world, changing the ways we live, work, and think. The well-being of individuals, nations, and ultimately our Earth depends in part on technoscientific developments that are part of the process shaping both the social fabric and the natural environment, both in America and globally.

Following an introductory core course, students in the STS Program choose from a variety of electives and complete a yearlong senior research project. By doing so they gain an understanding of the historical and social dimensions of science and technology, become better-informed citizens of our high-tech society, and hone critical and valuable interdisciplinary skills involving writing, speaking, and creative thinking. Students pursuing a major or minor in STS require no special technical expertise.

Requirements for the Major in Science, Technology, and Society

The STS major has a core curriculum based on the research and teaching interests of the faculty. All courses are either U.S. or internationally focused and either science or technology focused. Majors must take three required courses and choose a minimum of eight electives from the list of STS-approved courses below. Courses taken abroad or otherwise not on this list require the approval of the STS Program director.

- ST112: Introduction to STS (required)
- ST485: Technology Matters (required)
- ST486: Senior Project: The Craft of Research or ST484 Honors (required)
- One 200-level or higher course in natural science or computer science beyond the all-College requirement
- One STS internationally focused course (designated I)
- One STS U.S.-focused course (designated U)
- One STS science-focused course (designated S)
- One STS technology-focused course (designated T)
- Three approved STS electives

Electives are chosen from the list of STS-approved courses to fulfill the I, U, S, and T foci, but a course that satisfies two or more foci may not be counted twice. In choosing the eight electives, students must take a minimum of three courses designated or cross-listed as ST. A student may not count more than two 100-level electives toward the major.

Senior Projects

All senior STS majors will take ST485, which will prepare them for research through seminar readings, literature reviews, and proposal writing. This is the first part of a yearlong capstone experience in which students design and complete a final integrative project in science, technology, and society. This is followed by ST486, an intensive research and writing experience with final public presentations. Any member of the faculty may serve as an advisor for STS senior projects.

Honors in Science, Technology, and Society

Students with a 3.5 GPA in the major (and at least a 3.25 GPA overall) may request permission to undertake an honors thesis. They will enroll in ST485 and meet with other STS seniors to prepare a literature review and proposal, which must be approved by a panel of faculty members. Students continuing in the honors program will enroll in ST484 under the supervision of an advisor and second reader. Upon successful completion of the thesis and fulfillment of all requirements for the major, and if a 3.5 GPA in the major is maintained, the student will be invited to deposit a copy of his or her thesis in Miller Library and will graduate with "Honors in Science, Technology, and Society."

Requirements for the Minor in Science, Technology, and Society

Science, Technology, and Society 112, 485, three other STS courses, and at least two courses from the list of STS-approved courses.
**List of STS-Approved Courses**

* Key: International = I; U.S. = U; Science = S; Technology = T

**Anthropology**
- 112 Cultural Anthropology I
- 256 Land, Food, Culture, and Power I
- 341 Culture, Mobility, Identity I

**Art**
- 252 Medicine and Visual Culture U, S
- 285 History of Photography I, T
- 454 Picturing Nature: American Art and Science U, S

**Biochemistry**
- 362 Medical Biochemistry S

**Biology**
- 133 Microorganisms and Society U, S
- 164 Evolution and Diversity S
- 259 Plants of the Tropics I, S
- 271 Introduction to Ecology S
- 274 Neurobiology S
- 275 Human Physiology S

**Chemistry**
- 217 Environmental Chemistry S

**Computer Science**
- 151 Computational Thinking; Science T
- 232 Computer Organization T

**Economics**
- 231 Environmental and Natural Resource Economics U
- 341 Natural Resource Economics U, S

**English**
- 262 Poetry of Revolution I
- 233 Data and Literature in the Scientific Revolution I, S

**Environmental Studies**
- 118 Environment and Society U
- 234 International Environmental Policy I
- 265 Global Public Health I
- 319 Conservation Biology S
- 366 Environment and Human Health I, T
- 494 Problems in Environmental Science S

**German**
- 263 Weird Fictions I

**History**
- 245 Science, Race, and Gender S
- 246 Luddite Rantings: A Historical Critique of Big Technology U, I, T
- 248 Nuclear Visions, Environmental Realities I, U, T
- 346 Global Health History I, S
- 354 Skin-scapes: Beauty, Skin, and Cosmetics in East Asian History I, T
- 394 Ecological History I, S

**Mathematics**
- 376 History of Mathematics I, S

**Philosophy**
• 126 Philosophy and the Environment U, S
• 213 Philosophical Inquiries into Race I, S
• 217 Feminism and Science S
• 317 Philosophy of Science S
• 328 Radical Ecologies S

Psychology
• 233 Biological Basis of Behavior S

Russian
• 232 Science Fiction in the Great Utopia I

Science, Technology, and Society
• 112 Science, Technology, and Society (required)
• 117 Information Use and Misuse: Big Data in America U, T
• 132 Origins: Order v. Chaos
• 215 Weather, Climate, and Society I, U, S, T
• 232 Seminar: Origins I, U, S, T
• 297 History of Biology I, S
• 484 Honors in STS
• 485 Technology Matters (required)
• 486 Senior Project: The Craft of Research (required)
• 491/492 Independent Study

Sociology
• 131 Introduction to Sociology U
• 247 Universal Health Care: Could It Work Here? I, U
• 249 Life Sciences and Society U, S

Course Offerings

ST112s Science, Technology, and Society Critical perspectives on the social aspects of science and technology in our lives, in the world around us, and throughout history. Issues include gender, communications, war, and the environment.  Four credit hours.  S.  FLEMING

ST112Ws Science, Technology, and Society (Writing-intensive) Critical perspectives on the social aspects of science and technology in our lives, in the world around us, and throughout history. Issues include gender, communications, war, and the environment. Prerequisite: First-year standing.  Four credit hours.  S, W1.  FLEMING

ST117j Information Use and Misuse: Big Data in America Examination of "big data" collection and mining; how the U.S. government and businesses utilize our personal, geographic, and behavioral data; and the impact on our society and government. Overview of governing policies and laws, collection technologies, and public and private use. Considers big data's impact on our everyday lives and privacy and what it means to be information literate. Discussion based. Students develop critical thinking and writing skills and understanding of the policies, terminologies, and concepts needed to examine the topic and related case studies. Previously listed as GO118 (Jan Plan 2016).  Three credit hours.  KUGELMEYER

[ST120] Cognitive Science of Religion Religion is deeply puzzling from the perspective of evolutionary biology. The practice of religion takes time and energy, and yet it does not have any clear adaptive benefits: evolutionarily, gathering food is more rewarding than kneeling in prayer. So, how did religion become a universal if it is so costly? We explore both the psychology of religion and recent attempts to understand its evolutionary history.  Four credit hours.  S, W1.

ST120As Information Before and After Google: Impacts and Technologies Explores the nature of information and how technology has changed our experience and understanding of it over the past 75 years. Emphasizes the relationship between information and technology and explores the impact of information technologies on societies, organizations, and people. Participants explore how people understand and evaluate information and in what contexts information is valued and why. Students will develop and improve their understanding, critical thought processes, and analytic skills around a range of information technologies. Class format is discussion based, and the focus is on developing scholarly writing skills.  Four credit hours.  W1.  KUGELMEYER

ST132f Origins: Order v. Chaos Focuses on origins in their many forms — political, literary, artistic, cultural, social, scientific, and
STS Programs p. 4

conceptual. Involves public lectures by visiting scholars and Colby faculty representing many disciplines, with focused discussion and required short weekly student reflection papers posted on the course weblog. Nongraded. May be taken for credit a total of four times. 

**Origins theme course. One credit hour.** FLEMING, RIZZO

**ST213s** Introduction to Computer Music Listed as Music 213. Four credit hours. A. HALLSTROM

**[ST215]** Weather, Climate, and Society A scientific introduction to the Earth’s atmosphere and historical and social issues related to weather and climate. Topics include the atmosphere’s composition, structure, and dynamics; air pollution; ozone depletion; natural disasters; and climate change. Includes lectures, an exam, quizzes, short essays, and a group project to be presented in a final poster session. Prerequisite: Concurrent registration in Science, Technology, and Society 132. Four credit hours. N.

**ST216s** Philosophy of Nature Listed as Philosophy 216. Four credit hours. PETERSON

**[ST217]** Feminism and Science Listed as Philosophy 217. Four credit hours. S, U.

**ST232f** Seminar: Origins Involves readings, seminar discussions, presentations, a required poster (to be presented as the final event in the co-requisite Science, Technology, and Society 132) and a final research paper. Schedules permitting, the ST132 speakers will be invited to participate in the seminar discussions. Open to first-year students. Prerequisite: Concurrent registration in Science, Technology, and Society 132. Three credit hours. FLEMING

**ST233fs** Biological Basis of Behavior Listed as Psychology 233. Four credit hours. BUCCIGROSSI

**ST245f** Science, Race, and Gender Listed as History 245. Four credit hours. N, U. JOSEPHSON

**[ST246]** Luddite Rantings: A Historical Critique of Big Technology Listed as History 246. Four credit hours. H, U.

**ST247f** Universal Health Care: Could It Work Here? Listed as Sociology 248. Four credit hours. S. AVILES

**ST248s** Nuclear Visions, Environmental Realities Listed as History 248. Four credit hours. H, I. JOSEPHSON

**ST249s** Life Sciences and Society Listed as Sociology 249. Four credit hours. S. AVILES

**[ST252]** Medicine and Visual Culture Listed as Art 252. Four credit hours. A.

**[ST259]** Plants of the Tropics Listed as Biology 259. Three credit hours.

**ST263f** Weird Fictions (in English) Listed as German 263. Four credit hours. ELLIS

**ST285f** History of Photography Listed as Art 285. Four credit hours. A. SALTZ

**ST297Jj** World History of Biology Examines the emergence and development of life sciences since 1700 by introducing major ideas, approaches, and debates about life as well as their material and cultural underpinnings and social impacts. Discussion focuses on the various understandings, modifications, and representations of them in different nations and cultures in the 20th and 21st centuries. Students will develop skills in discussion, analysis, research, writing, and presentation. Three credit hours. H. JIANG

**[ST317]** Philosophy of Science Listed as Philosophy 317. Four credit hours.

**[ST341]** Culture, Mobility, Identity: Encounters in the African Diaspora Listed as Anthropology 341. Four credit hours. S, I.

**ST346f** Global Health History Listed as History 346. Four credit hours. H. WEBB

**[ST361]** Special Topics in Health and Medicine: Substance Use and Abuse Listed as Sociology 361. Three credit hours.

**ST394f** Ecological History Listed as History 394. Four credit hours. H. WEBB

ST484s Honors in Science, Technology, and Society  Majors may apply for admission in December of their senior year by preparing and defending an honors proposal. The honors program requires focused research conducted under the guidance of a faculty member, leading to the writing of a thesis approved by the advisor and a second reader.  **Prerequisite:** Senior standing, a 3.50 grade point average in the major, a 3.25 overall grade point average, successful completion of Science, Technology, and Society 485, and permission of the program faculty.  Four credit hours.

ST485f Technology Matters  Seminar emphasizing classical, enduring issues involving the social study of science and technology. A senior capstone in preparation for a career. Students design, propose, and initiate a year-long project through broad reading, seminar discussions, written think pieces, a book review, thorough literature search, and preparation of a proposal and exploratory essay. Completion, typically in the spring but including a possible January internship, requires intensive research, writing, and presentation at a public seminar. Research funding may be available. Goal is to complete a project the student finds exciting and challenging and that will solidify her/his ability to conduct interdisciplinary research.  **Prerequisite:** Senior standing and a W1 course.  Four credit hours. W3.  FLEMING

ST486s Senior Project: The Craft of Research  Written and oral communication of research. Students complete a final integrative project and present three public seminars.  **Prerequisite:** Science, Technology, and Society 485.  Four credit hours.  FLEMING

ST491f, 492s Independent Study  Independent study in areas in which the student has demonstrated the interest and competence necessary for independent work.  **Prerequisite:** Permission of the instructor and the program director.  One to four credit hours.  FACULTY
HISTORY OF THE SCIENCE IN SOCIETY PROGRAM

Earl Hanson, Fisk Professor of Natural Sciences
Founder of the Science in Society Program
Program Chair, 1975-86, 1991-93

The Science in Society Program was founded at Wesleyan in 1975 as the College of Science in Society, with the assistance of a 5-year grant from the National Science Foundation and the Fund for the Improvement of Post-Secondary Education. Earl Hanson, then Professor of Biology, was both the author of the grant and the founding Chair of the Program.

The Program was then foreseen as a successor to the College of Quantitative Studies, a three-year interdisciplinary major in science and applied mathematics, which had been active from 1960 until 1966. The College of Quantitative Studies had been organized as one of three alternative "colleges" within the University (along with two still extant programs, the College of Letters and the College of Social Studies). Intended to foster interdisciplinary, applied work within the sciences, the College was especially notable for its student projects, involving the solution of problems for outside agencies like Raymond Engineering and the Department of Motor Vehicles, and for its Senior Seminar, an interdisciplinary capstone course including the sciences, philosophy, and public affairs.

Like many "Science, Technology, and Society" or "Science, Technology, and Values" programs being developed at roughly the same time at a number of engineering schools (notably MIT,
Lehigh, Renssalaer, Virginia Tech and Georgia Tech), but adapted to the context of a selective liberal arts university, the original Science in Society Program aimed to encourage a humanistic approach to scientific and technological problems, conjoined with a commitment to scientific excellence and a recognition of the scientific and technological dimensions of many social and political problems. Students initially went through their three years in the Program in a sequence of small Colloquia with all other students in their cohort, while taking additional courses tailored to their particular interests. The capstone of the Program in its early years was a required thesis, which students typically worked on for up to two years, and a Senior Colloquium in which students presented their thesis research and other current issues in a seminar format. Although the topics for these thesis projects were quite wide-ranging, environmental issues, critical assessments of medical theory and practice, agriculture, urban planning, and human population growth were common foci of student research.

Apart from the founder, Earl Hanson, the initial staffing of the Program was drawn from faculty whose time was borrowed from other departments (notably C. Stewart Gillmor in History and Barry Gruenberg in Sociology) and from faculty hired on term contracts with funding from the initial grant to the University (including science writer Jeffrey Baker, planner Howard Brown, writer Barbara Bell, and historian Howard Bernstein). In 1979, the University confronted the difficult decision whether to establish the Program on a permanent basis after the expiration of its outside funding, at a time in which the University as a whole was reducing the size of the faculty. After extensive Committee review and faculty debate, the University decided to commit three faculty FTE to enable the Program to continue, with the expectation that these positions would be filled by six or more faculty holding joint appointments between the Program and other departments in the University (including Earl Hanson, whose appointment was officially converted to a joint appointment in Biology and Science in Society). The conversion of the original term appointments to joint tenure-track or tenured appointments began in 1981, with the appointment of Joseph Rouse in Philosophy and Science in Society. Over the next decade, other appointments were added, including Karen Knorr-Cetina (Sociology), Drew Carey (Earth and Environmental Sciences), Sue Fisher (Sociology), Anthony Daley (Government), and Marc Eisner (Government). Robert Wood (Government) and William Trousdale (Physics) also joined the Program for extended periods during the 1980's. Robert Rosenbaum, Professor of Mathematics and founder of the College of Quantitative Studies, rejoined the Program for one year as Chair when Earl Hanson was on leave. Many of the faculty who had been hired under the original grant continued to teach in the Program during this extended transition; Howard Brown, the last of the original adjunct faculty who had begun the Program, left the University in 1990.

Several significant intellectual and pedagogical trends are discernable in the Program's development from 1980 until 1993, during which time the Program typically graduated between 10 and 15 students a year. The social sciences took on a more prominent role in the Program, which had originally been conceived primarily by natural scientists: most notably influential were the newly emergent interdisciplinary social studies of science, and political economy and policy analysis. Traditionally structured academic courses in these fields took on a more prominent role in the curriculum, replacing many of the relatively free-wheeling, project-oriented colloquia. While independent research projects remained a prominent part of the Program's requirements, these
were gradually scaled back from 2-year to 1-year projects, and some students were permitted to substitute a briefer senior essay for the senior thesis. The Program itself formally changed from a three-year "college" to a two-year interdisciplinary major, a change which also eliminated comprehensive oral and written examinations in the junior and senior years. Although there was no formal division within the Program, students increasingly tended to gravitate toward one of two distinct intellectual foci: critical philosophical and sociological reflections upon the sciences and/or medicine, and environmental studies, especially environmental policy. Many Program faculty converted their joint appointments back to traditional departmental positions, while continuing to teach in the Program.

The untimely death of Earl Hanson in October 1993 precipitated a substantial reorganization of the Science in Society Program. Not only was Professor Hanson the founder, the Chair, and the faculty member most prominently associated with the Program; his interests provided the primary link between the two distinct "wings" of the Program in environmental studies and interdisciplinary science studies. Because of his many contributions, and deep commitment to the Program, it was widely recognized that no single faculty member could replace his role in the curriculum and administration of the Program.

After extensive discussion, a decision was made to split the Program. A new certificate program in Environmental Studies was organized under the leadership of faculty in Earth & Environmental Sciences, Economics, and History, while the Science in Society Program itself continued with a more specific focus upon the history, philosophy and social studies of science and medicine. With the aid of a substantial grant from the National Endowment for the Humanities and the National Science Foundation through their joint initiative on "Science and Humanities: Integrating Undergraduate Education," continuing faculty Joseph Rouse and Sue Fisher were joined by Professors C. Stewart Gillmor, Jill Morawski, and William Johnston. Half a dozen new courses were developed under the auspices of the NSF/NEH grant. By splitting off environmental studies into a separate course of study, the Science in Society Program was able to expand its science requirements, add a substantial curricular component in the history of science, and provide its students with a more intellectually coherent major. After a brief interregnum while the new curriculum was being developed, the first students graduated under the new requirements in 1995, and the Program has once again grown to include over 30 junior and senior majors, making it one of the five largest interdisciplinary majors at Wesleyan University. The appointment of Assistant Professor Jennifer Tucker (History and Women's Studies) in 1998 strengthened our core faculty, and marked the consolidation of the revised curriculum as a vital component of Wesleyan's overall program of study.

The Science in Society Program holds a distinctive and important place in the context of Wesleyan University's mission. Wesleyan aspires to combine the forefront research typical of the best universities with a commitment to the intensive undergraduate teaching that characterizes the best liberal arts colleges. Such a joint commitment would be impossible to fulfill without making the best of current research accessible to undergraduates in the classroom. Throughout its first quarter century, the Science in Society Program has been guided by this goal, adapting the most innovative and informative research on the social, cultural, and political significance of the sciences to the undergraduate classroom. Moreover, since Wesleyan's Ph.D. programs in

http://www.wesleyan.edu/sisp/history.html
the sciences are the most visible and distinctive manifestation of the seriousness of the University's commitment to research, our Program's aspiration to connect the best humanistic and social scientific studies of the sciences and medicine with serious and sustained study of a science undertaken with Wesleyan's research-oriented science faculty is central to this University's self-understanding.
SCIENCE IN SOCIETY
2017—2018

SCIENCE IN SOCIETY PROGRAM FACULTY

DEPARTMENTAL ADVISING EXPERT 2017–2018: Jill Morawski

Department/Program Home Page

DEPARTMENT/PROGRAM DESCRIPTION

The sciences and scientifically sophisticated medicine and technology are among the most important and far-reaching human achievements. Scientific work has affected people’s intellectual standards, cultural meanings, political possibilities, economic capacities, and physical surroundings. Scientific research has also acquired significance, direction, authority, and application within various cultural contexts. To understand the sciences as human achievements is, in significant part, to understand the world in which we live.

The Science in Society Program (SISP) is an interdisciplinary major that encourages the study of the sciences and medicine as institutions, practices, intellectual achievements, and constituents of culture. Students in the program should gain a better understanding of the richness and complexity of scientific practice and of the cultural and political significance of science, technology, and medicine. The major is well suited for students interested in a variety of professional and academic pursuits after graduation, since it encourages students to integrate technical scientific knowledge with a grasp of the historical and cultural setting within which it is understood and used.

MAJOR DESCRIPTION

The major consists of three components: courses offered within the Science in Society Program (SISP) in the history, philosophy, and social studies of the sciences, medicine, and technology; at least two years of coursework in a single scientific discipline; and an area of concentration to provide depth in a related discipline. Students can either complete their area of concentration in anthropology, FGSS, history, philosophy, religion, or sociology, or they can concentrate in a scientific discipline by completing a major in that science as part of their SISP major (the first two years of the science major satisfy the SISP science requirement).

First- and second-year students interested in the Science in Society Program should begin their science courses as soon as possible. Most students take their first course in the program as a sophomore. The core courses in the history of science or sociocultural studies of science are especially recommended as first courses in the program.

STUDENT LEARNING GOALS

The faculty of the Science in Society Program have approved the following list of learning goals for all students undertaking the major in science in society:

- **Scientific competence:** Competence beyond the major-track introductory level in a scientific discipline, indicated by students’ performance in appropriate courses in that science;
- **Core competence in science studies:** Improved understanding of the sciences and/or medicine as historically developing, socially and culturally situated practices of inquiry and conceptual understanding; that understanding should have both multidisciplinary breadth and greater depth within a particular disciplinary area of concentration.
• **Disciplinary depth:** Those students whose area of concentration is in a discipline that incorporates the sciences and medicine as objects of inquiry should improve their understanding of how that discipline conceives and approaches the sciences and/or medicine and how its approach connects to other ways of understanding the sciences and medicine; those students whose area of concentration is fulfilled by a second major in a scientific discipline should improve their understanding of how practices and achievements of that science are historically, culturally, and philosophically situated and how their scientific understanding and their core competence in science studies can be mutually informative.

• **Scientific contextualization:** Improved skills for engaging their scientific understanding in relevant ways with specific issues or concerns of broader social, cultural, political, and/or philosophical significance and for acquiring and assessing relevant technical background for such issues that go beyond their prior scientific training.

**ADMISSION TO THE MAJOR**

Students who declare their major in SISP must specify the fields in which they plan to complete their science requirement and their area of concentration. Students who seek to add the major after their sophomore year will only be admitted after review to ensure that they are in a good position to complete the major. All students who declare the major must submit a statement of their goals in the major, for advising purposes, and for later evaluation of how well those goals were met. There are no other requirements for admission to the major.

**MAJOR REQUIREMENTS**

Students may enroll in the program either as a stand-alone major or as a joint major with one of the science departments (astronomy, biology, chemistry, earth and environmental sciences, molecular biology and biochemistry, neuroscience and behavior, physics, or psychology). All students must take one course each in history of science, philosophy of science, and sociocultural studies of science, along with three additional courses in the program (including at least one 300-level seminar). Students for whom the program is a stand-alone major must also take a minimum of four major-track courses in one of the science departments and a structured three-course area of concentration in either anthropology, FGSS, history, philosophy, religion, or sociology. Students who undertake the joint major with a science must complete all requirements for a science major in place of the area of concentration. Further information about program requirements, policies, and its learning goals can be found at wesleyan.edu/sisp.

**STUDY ABROAD**

Many SISP students go abroad for a semester as a junior. Students can normally count only one course from study abroad toward the six required courses in SISP, although some students also get credit for science courses or toward their area of concentration.

**CAPSTONE EXPERIENCE**

The Science in Society Program offers three options for students seeking a senior capstone experience for their work in the major:

• All students are required to take one or more 300-level seminars in the program. These courses, on a wide range of topics, each with a term paper or other independent research component, provide many opportunities for what can become capstone projects, and students are encouraged to choose their seminar courses and their research topics in those courses with this possibility in mind.

• Students with a suitable topic and faculty sponsor have an option of writing a senior thesis, which can lead to departmental honors for those eligible. Interested students should consult members of the faculty in the spring of their junior year to help refine their proposed topic and find a suitable advisor. For further information on this option, see wesleyan.edu/sisp/for_majors/honors_thesis.html.

• Students with a suitable topic and faculty sponsor may undertake a senior essay or other independent capstone project as an independent tutorial.
Neither thesis tutorials nor senior essay tutorials can count toward the six courses in the program that are part of the major requirements. The required courses provide indispensable background for undertaking independent projects. Students considering writing a thesis are encouraged to be well along with the core major requirements before beginning the thesis as first-semester seniors.

**HONORS**

To be eligible for departmental honors, a student must meet two criteria. First, all work done in the core courses of the Science in Society Program, including electives, must be considered, on average, to be very good (equivalent to a B+ or better). Second, a senior thesis deemed excellent by its readers is necessary for honors, and a genuinely distinguished thesis is needed for high honors.

**TRANSFER CREDIT**

Courses may be transferred from other institutions to replace one of the science in society requirements, but we review these requests very stringently, and we only accept courses clearly equivalent in level and field to courses we would accept at Wesleyan.

Last Updated:
MAJOR REQUIREMENTS AND POLICIES

The major program in Science in Society has three components: science courses, SiSP courses, and an area of concentration. Those students whose area of concentration is one of the sciences must complete a major in that science as part of the requirements for their SiSP major.

All majors must also participate in the SiSP Assessment Program, by submitting an initial statement of their goals in the Program when first declaring the major, and a self-assessment of what they have accomplished and learned in the Program during their final semester. For details about this requirement, see our official statement under Learning Goals and Assessment.

I. Science Courses

All students are required to take a minimum of four 1-credit major track courses in a single science. The sciences which we accept for this purpose are: Astronomy/Physics, Biology, Chemistry, Earth & Environmental Sciences, Molecular Biology & Biochemistry, Neuroscience, Physics, Psychology. The laboratory courses associated with introductory science courses do not count toward the four-course requirement.

N.B. For most students, these science courses must be completed in a single department, to enable them to get beyond the introductory level. For example, one cannot satisfy this requirement by taking one year of Chemistry and one year of Biology. There are two kinds of exceptions to this policy. First, students who do their science in Biology, MB&B, Neuroscience, or Psychology may take courses under more than one departmental designation, so long as all four of the courses that they count toward the SiSP major are cross-listed in one of those departments. Second, there are some variations permitted for students who do their science courses in Astronomy or E&ES. Students who do their science courses in Astronomy may count Physics 113, 116, along with Astronomy 155 and one upper-level ASTR course toward the requirement. Students who do their science in E&ES may count a year of Chemistry, E&ES 199, and a 200-level E&ES course OR a year of Biology, E&ES 199, and an upper-level Biology course in Ecology or Conservation Biology.

II. Science in Society Courses

All students are required to take a minimum of six credits in courses listed at the 200- or 300-level in the Program, of which three must satisfy specific requirements in History of Science, Philosophy of Science, and Sociocultural Studies of Science and three additional courses in the program (including at least one 300-level seminar). Individual or group tutorials, including senior thesis or essay tutorials, normally cannot count toward the 6-credit requirement within SiSP.

HISTORY OF SCIENCE (students are encouraged but not required to take a history course emphasizing the sciences they have studied for their science requirement).

SISP 221 - History of Ecology

http://www.wesleyan.edu/sisp/for_majors/major_requirements.html
SISP 222 - History of Disease and Epidemics
SISP 254 - Science in Western Culture
SISP 255 - Seeing a Bigger Picture: Integrating Environmental History and Visual Studies
SISP 258 - The Evolution of Scientific Medicine
SISP 259 - Discovering the Person
SISP 276 - Science in the Making
SISP 285 - History of Science and Technology in Modern China

N.B. 100-level FYI (First Year Initiative) courses in history of science do not currently satisfy this requirement, nor do they count as electives for the major.

PHILOSOPHY OF SCIENCE

SISP 202 - Philosophy of Science
SISP 286 - Philosophy of Mind (Open to SiSP students whose science courses are in Psychology)

SOCIOCULTURAL STUDIES OF SCIENCE

SISP 205 - Sciences as Social and Cultural Practices
SISP 206 - Theorizing Science and Technology
SISP 215 - Metabolism and Technoscience
SISP 256 - Race and Medicine in America
SISP 262 - Cultural Studies of Health
SISP 264 - Social and Cultural Studies of Science

A second approved course in the History of Science (see above list) will also satisfy this requirement.

III. Area of Concentration

Option 1: Students may fulfill their area of concentration in a science by completing a major in that science (the first four courses satisfy their science requirement; the remainder count as their area of concentration).

Option 2: Students may fulfill their area of concentration by taking three courses in any of the following areas as specified below:

ANTHROPOLOGY: EITHER ANTH 101 OR one course from "Crafting Ethnography" concentration within the department; two relevant upper-level electives, at least one of which
must be at the 300-level. In planning this concentration with their adviser, students should note that ANTH 101 can be a pre-requisite for certain upper level courses and plan accordingly.

**FEMINIST, GENDER, AND SEXUALITY STUDIES: FGSS 209** and two other courses approved by the adviser. One FGSS Gateway course may normally be included in the concentration.

**HISTORY:** Students are encouraged to work with their adviser to devise a coherent concentration in History. The three courses for the concentration must include at least one Seminar (either a Sophomore Seminar, or an Advanced Seminar), and should normally be taken within a single field (e.g., AALA, United States, Europe, Intellectual, Gender, Religion, etc.). History concentrators must also include a second course in the History of Science among their SiSP courses.

**PHILOSOPHY (metaphysics and epistemology):** PHIL 202 (Philosophical Classics II), one intermediate level "Mind and Reality" course, and a third course approved by the adviser.). 100-level courses do not count toward this concentration.

**PHILOSOPHY** (ethics and political philosophy): Three courses in ethics or political philosophy (numbered 211-230, 266-285 or 331-360). With permission of your adviser, a course in political theory in the Government Department may be counted toward this concentration.

**RELIGION:** Three courses, one each drawn from the Religion Department's classification of courses as addressing "Method and Theory," "Thematic Approaches," and "Historical Traditions." Other appropriate courses may be substituted with adviser's permission. RELI 101 can count toward the concentration as a "Method and Theory" course.

**SOCIIOLOGY:** SOC 151 and two additional courses approved by the adviser. Many students find it helpful to take some courses cross-listed with SiSP for their sociology concentration, but must then take other SiSP courses as electives for the Program.

**Miscellaneous Program Policies**

Courses that are cross-listed between SiSP and a student's Area of Concentration department may be counted for either requirement, but not for both simultaneously.

Education-in-the-Field, Individual Tutorials, Group Tutorials, Senior Theses, and other independent study formats are not normally accepted toward the five required courses in SiSP itself. Students are strongly encouraged not to include more than one such course in their Area of Concentration.

Courses may be transferred from other institutions to replace one of the Science in Society requirements, but we review these requests very stringently, and only accept courses clearly equivalent in level and field to courses we would accept at Wesleyan.
History and Science

Professor Alex Csiszar, Acting Director of Undergraduate Studies
The History and Science concentration at Harvard is a flourishing interdisciplinary field of study. We are also a small and friendly concentration, with a real sense of community, and we pride ourselves on finding ways to nurture students' individual interests through a flexible curriculum, and opportunities for one-on-one instruction, internships, behind the scenes museum and exhibition design opportunities, research assistantships with faculty, and special travel programs for concentrators only.

Why should I consider History and Science?
History and Science may be a good choice for you if:
(1) You would like to do significant work in some area of science (any field taught in the College) and combine it with historical, ethical and social analysis of how science, medicine, or technology works in the world.
(2) You are interested in the ways in which science, medicine or technology is affected by (and in turn affects) important issues in politics, industry and policy, whether climate change, the teaching of evolution in the public schools, the patenting of genes and new forms of life, and more.
(3) You are interested in big questions -- the existence of God, the nature of free will, the roots of human morality, and more -- and would like to understand the ways in which science has shaped or is shaping the ways in which we think about them.
(4) You are considering attending medical school, and would like a concentration that allows you to count many of your premed science requirements, even as you take classes and do advanced research in the history of medicine, medical anthropology, and health policy.
(5) You are interested in computer science, or considering a career in engineering or information technology, and would like a concentration that allows you to count many computer science and engineering classes for concentration credit, even as you to take classes and do advanced research in the history and social analysis of technology, computer science, and the world of big data.
(5) You are – or aspire to be – a person who is equally literate in the world of the sciences and the world of the humanities and the social sciences.
(6) You would value a concentration that cares deeply about teaching, provides abundant opportunities for interaction with faculty, and will rigorously train you in essential analytic, presentation, and research skills that will be valuable for you, no matter what career you choose to pursue.

How is the concentration structured?
The concentration has a two-track structure that provides students with high levels of flexibility. Both of the tracks offer an honors and a non-honors option.

**The Science and Society Track** is designed for students who have an interest in doing significant course work in an area of science but who also want to study how science develops and affects the world: how it relates to industry, policy, politics and the broader culture. Students can both do science and analyze how science functions in the world of human affairs.

**The History of Science Track** does not require students to take science courses beyond the level mandated by General Education (though some may choose to do so and receive concentration credit). It offers students the possibility of studying the history and social relations of science more broadly. By taking a combination of courses from our department and also outside of it, students can learn how sciences as diverse as theoretical physics and economics interact with other areas of culture such as literature, film, art, or government. Concentrators in History and Science generally combine course-work in the history of science, medicine or technology (broadly defined) with course-work focused in any area of science taught in the College. Our students also often take courses for concentration credit in global health, science and religion, medical ethics, sociology of science, philosophy of science, anthropology of medicine, and more. Tutorials are aimed at introducing concentrators to some of the most exciting questions in the field and training them with the reading, research, and writing skills they need to do original research of their own. By the time of graduation, all our concentrators possess advanced social science research skills, and often produce original academic work of very high quality.

The concentration also offers three special foci or paths through the program: (1) Medicine and Society,(2) Mind, Brain, and Behavior, and (3) Technology, Information, and Society.

**Medicine and Society** offers pre-medical students an opportunity to combine the science work required of them for medical school with disciplined historical and social science analysis of medicine, health care, public health and the allied medical sciences and medical technologies. This is an honors-only plan of study, and all students must write a senior thesis

**Mind, Brain, Behavior** offers students with interdisciplinary leanings an opportunity to join a College-wide community of undergraduates from six different departments who have interests in the neurosciences and their allied fields, all while focusing their own studies in a mix of psychology, brain science, and the history of the mind, brain and human sciences. This is an honors-only plan of study, and all students must write a senior thesis.

**Technology, Information and Society** offers students an opportunity to combine coursework in computer science and its allied fields (including select courses in engineering sciences) with courses in the history and social study of technology, computing, and information science. This is an honors-optional plan of study. Students are encouraged to write a senior thesis, but some may choose instead to take more advanced work in engineering or computer science during the course of their senior year.

**What are the requirements?**

Every concentrator will take History of Science 100, (or an approved substitute), which is offered in the fall semester. In addition, every concentrator will take one semester of sophomore tutorial and one semester of junior tutorial, taught by faculty members and teaching fellows from the Department of the History of Science.
History of Science 97, the sophomore tutorial, is a hands-on course that introduces students to some of the most exciting and productive questions in the history of science, technology, and medicine, while developing critical reading, presentation, and discussion skills. Students work in groups to explore different aspects of a larger theme each week and share discoveries in sessions led by the faculty instructor. The course is further enhanced by a series of supervised individual group projects.

History of Science 98, the junior tutorial, is a course designed to train students in historical research, from how to work in archives to how to master relevant theoretical perspectives needed to think well about a research question. All students enrolled in this course are guided through an intense but supportive mentoring process that results in a 25-page independent research paper.

History of Science 99ab, the senior thesis tutorial, is an opportunity to spend a sustained period of time working on a research problem. Students choosing to write a senior thesis may be supervised by a faculty member or an advanced graduate student, and are free to pursue a diverse range of topics. Many of our theses go on to win College awards, and some have even been published. Students are welcome to look through the collection of past and present senior theses which are located in the Department of the History of Science.

**What can graduates do with a degree in History and Science?**

Our graduates frequently go on to successful careers in many areas, especially in jobs or forms of further professional training that require or value both technical and social scientific understanding of information science, biotechnology, medicine, health and global health, the law, and public policy. Many win prestigious fellowships that allow them to pursue further academic study. Our alumni have had this to say about their experience with us:

“It was the most flexible, versatile, and practical concentration on campus. It prepared me for both research endeavors within the halls of academia as well as the critical thinking skills needed for graduate degree work.”

“History and Science is the best concentration of all time. Period…Liberal arts educations aren’t intended to ‘qualify’ you for any particular job, but History and science provides you with a truly broad based, well rounded education and teaches you novel ways of looking at the world which have been invaluable to me as a lawyer and as a human being.”

Employers are increasingly looking for graduates who are not just literate but also scientifically literate, not just technically skilled in a special subject but able to see the larger cultural, social, and policy implications and impact of scientific and technical developments. If this kind of breadth of vision appeals, our concentration may be right for you.

**REQUIREMENTS**

**History of Science Track**

**Basic Requirements: 11 courses (44 credits)**

1. **Required courses:**
   1. History of Science 100: Knowing the World: Introduction to the History of Science.
   2. Six courses in the history of science, medicine, and technology. One should be a broad gateway course and another one should be a department conference course (or a 200-level course, with the approval of the instructor). One may include supervised reading and research, or another special project.
3. Two courses, normally outside the department, designed to allow students to connect special interests in the history of science to relevant course work offered in other departments; examples include certain courses in history, film studies, sociology, religion, medical anthropology, philosophy of science, and literature.

2. Tutorials:
   1. Sophomore year: History of Science 97 (one course) required, group tutorial. Letter-graded.
   3. Thesis: None.
   4. General Examination: None.

5. Other information:
   1. Pass/Fail: Two non-letter graded courses, including relevant Freshman Seminars taught by department faculty, may count for concentration credit.
   2. Study Abroad: Students may elect to study abroad during their junior year. The department will count up to two approved courses out of residence towards concentration requirements. There is also the possibility of receiving two courses' worth of credit for participation in a summer study abroad program led by a member of the Department. Please consult with the Director of Undergraduate Studies or the Manager of Student Programs for more information.

History of Science Track

Requirements for Honors Eligibility: 13 courses (52 credits)

1. Required courses:
   1. History of Science 100: Knowing the World: Introduction to the History of Science.
   2. Six courses in the history of science, medicine, and technology. One should be a broad gateway course and another one should be a department conference course (or a 200-level course, with the approval of the instructor). One may include supervised reading and research, or another special project. No more than two of the courses may be introductory, and one must cover a period of time before 1800.

3. Two courses, normally outside the department, designed to allow students to connect special interests in the history of science to relevant course work offered in other departments; examples include certain courses in history, film studies, sociology, religion, medical anthropology, philosophy of science, and literature.

2. Tutorials:
   4. General Examination: None.

5. Other information:
   1. Pass/Fail: Two non-letter graded courses, including relevant Freshman Seminars taught by department faculty, may count for concentration credit.
   2. Study Abroad: Students may elect to study abroad during their junior year. The department will count up to two approved courses out of residence towards concentration requirements. There is also the possibility of receiving two courses worth of credit for participation in a
summer study abroad program led by a member of the Department. Please consult with the
Director of Undergraduate Studies or the Manager of Student Programs for more information.

History of Science Track

Non-Thesis Option: 12 courses (48 credits)

1. **Required courses**: Same as Basic Requirements.
2. **Tutorials**: Same as Basic Requirements.
3. **Thesis**: None.
4. **General Examination**: None.
5. **Other information**: Same as Basic Requirements, plus the following:
   1. **Minimum concentration GPA**: Students must have a concentration GPA equivalent to the
      College-wide cut-off for degrees Magna cum Laude in Field. Concentration grade-point
      averages will be calculated from a student’s best twelve courses that meet the requirements,
      including final semester grades.
   2. **One graduate-level course**: Students must successfully complete (with a minimum B+ grade)
      at least one graduate-level (i.e., 200-level) course taught by a member of the History of
      Science faculty or in an appropriate other department (e.g., History). This requirement can
      also be met by completing a graduate-level track of work, as determined by the faculty
      instructor, offered within a 100-level course. The requirement is normally fulfilled in the senior
      year.
   3. **Determination of Departmental Honors**: A degree recommendation of Honors (not High or
      Highest Honors) will be awarded to students who meet these requirements.

Science and Society Track

Basic Requirements: 11 courses (44 credits)

1. **Required courses**:
   1. History of Science 100: Knowing the World: Introduction to the History of Science.
   2. Four courses in the history of science, medicine, and technology. Normally, at least three of
      the four courses must be in the history of science. One may include supervised reading and
      research, or another special project. Historically-oriented courses in other fields may be
      counted towards this requirement (with the approval of the Director of Undergraduate Studies).
   3. Four courses in science, all in one coherent field, though not necessarily in one department.
      No more than two may be introductory. Note: Courses may be drawn from any of the physical
      and biological or life sciences.
   4. **Tutorials**:
   1. **Sophomore year**: History of Science 97 (one term) required, group tutorial. Letter-graded.
   2. **Junior year**: History of Science 98 (one term) required. Letter-graded.
   3. **Thesis**: None.
   4. **General Examination**: None.
   5. **Other information**:
   1. Two non-letter graded courses, including relevant Freshman Seminars taught by department
      faculty, may count for concentration credit.
   2. Students may elect to study abroad during their junior year. The department will count up to
      two approved courses out of residence towards concentration requirements. Please consult
      with the Director of Undergraduate Studies or the Manager of Student Programs for more
      information.
Science and Society Track

Requirements for Honors Eligibility: 13 courses (52 credits)

1. **Required courses:**
   1. History of Science 100: Knowing the World: Introduction to the History of Science.
   2. Four courses in the history of science, medicine and technology. Normally, at least three of the four courses must be in the history of science. One may include supervised reading and research, or another special project. Historically-oriented courses in other fields may be counted towards this requirement (with the approval of the Director of Undergraduate Studies). No more than two of the courses may be introductory, and one must cover a period of time before 1800.
   3. Four courses in science, all in one coherent field, though not necessarily in one department. No more than two may be introductory. Note: Courses may be drawn from any of the physical and biological or life sciences.

2. **Tutorials:**
   1. **Sophomore year:** History of Science 97 (one term) required, group tutorial. Letter-graded.
   2. **Junior year:** History of Science 98 (one term) required. Letter-graded.
   3. **Senior year:** History of Science 99ab (two terms) required (preparation of senior honors thesis). Grade Sat/Unsat.

3. **Thesis:** Required.

4. **General Examination:** None.

5. **Other information:**
   1. **Pass/Fail:** Two non-letter graded courses, including relevant Freshman Seminars taught by department faculty, may count for concentration credit.

6. **Study Abroad:** Students may elect to study abroad during their junior year. There is also the possibility of receiving two courses worth of credit for participation in a summer study abroad program led by a member of the department. Please consult with the Director of Undergraduate Studies or the Manager of Student Programs for more information.

Science and Society Track

Non-Thesis Option: 12 courses (48 credits)

1. **Required courses:** Same as Basic Requirements.

2. **Tutorials:** Same as Basic Requirements.

3. **Thesis:** None.

4. **General Examination:** None.

5. **Other information:** Same as Basic Requirements, plus the following:

   1. **Minimum concentration GPA:** Students must have a concentration GPA equivalent to the College-wide cut-off for degrees Magna cum Laude in Field. Concentration grade-point averages will be calculated from a student’s best twelve courses that meet the requirements, including final semester grades.

   2. **One graduate-level course:** Students must successfully complete (with a minimum B+ grade) at least one graduate-level (i.e., 200-level) course taught by a member of the History of Science faculty or in an appropriate other department (e.g., History). This requirement can also be met by completing a graduate-level track of work, as determined by the faculty instructor, offered within a 100-level course. The requirement is normally fulfilled in the senior year.
3. **Determination of Departmental Honors**: A degree recommendation of Honors (not High or Highest Honors) will be awarded to students who meet these requirements.

**Medicine and Society**

**Requirements for Honors Eligibility: 14 courses (56 credits)**

The Medicine and Society focus in the Science and Society track is appropriate for students considering a career in medicine, health sciences, health policy, or who otherwise have a pronounced interest in the medical sciences. It allows students to combine course work in many of the scientific subjects required for medical school admission with a coherent program of courses that look at health and medicine from a range of historical, social, scientific and humanistic perspectives.

1. **Required courses**:
   1. History of Science 100: Knowing the World: Introduction to the History of Science.
   2. Four courses in medical sciences. No more than two courses may be introductory. Courses should be relevant courses in chemistry, the life sciences, the physical sciences, mathematics, molecular and cellular biology, organismic and evolutionary biology, neurobiology, or human evolutionary biology.

3. **Five additional courses**:
   1. At least two courses must be in the history of medicine or its allied fields (including the life sciences, mind sciences, bioethics, and biotechnology) and be taught by members of the Department of the History of Science.
   2. Two courses will normally be drawn from other disciplines concerned with the social, ethical, or humanistic analysis of medicine and health (e.g., anthropology, economics, ethics, sociology).
   3. One course may be an open-ended elective that can be fulfilled by taking any of the courses offered by the Department of the History of Science.

7. **Tutorials**:
   1. **Sophomore year**: History of Science 97 (one term) required, group tutorial. Letter-graded.
   2. **Junior year**: History of Science 98 (one term) required. Letter-graded.
   3. **Senior year**: History of Science 99ab (two terms) required. Preparation of senior honors thesis; normally, this will deal with some historical question to do with medicine and health, broadly understood. Graded Sat/Unsat.

5. **Thesis**: Required.

7. **General Examination**: None.

5. **Other information**:
   1. **Pass/Fail**: Two non-letter graded courses, including relevant Freshman Seminars taught by department faculty, may count for concentration credit.
   2. **Study Abroad**: Students may elect to study abroad during their junior year. There is also the possibility of receiving two courses worth of credit for participation in a summer study abroad program led by a member of the department. Please consult with the Director of Undergraduate Studies or the Manager of Student Programs for more information. More information may be found in the Focus in Medicine and Society guide, which is available in the Undergraduate Office, Science Center 355. Students may also consult the History of Science department website.
Mind, Brain, and Behavior Sciences

Requirements for Honors Eligibility: 14 courses (56 credits)

Students interested in integrating serious study of the sciences of mind, brain, and behavior with thoughtful attention to sociocultural, philosophical, and historical questions raised by those sciences may pursue a Mind, Brain, and Behavior (MBB) focus in History and Science, developed in collaboration with the Standing Committee on Neuroscience and the University-wide Mind/Brain/Behavior Interfaculty Initiative. (Mind, Brain, and Behavior tracks are also available in Human Evolutionary Biology, Computer Science, Linguistics, Philosophy, and Psychology.) Requirements for this program are based on those of the Science and Society track, except that:

1. At least three of the five sociocultural courses should be historical in nature. Up to two courses may be taken in an auxiliary area, such as:
   1. Health and Science Policy
   2. Medical Anthropology
   3. Religion and Ethics
   4. Philosophy of Mind & Behavior
      2. The four courses in science must include Science of Living Systems 20; the remaining three courses in science must include MCB 80 (ordinarily in the sophomore year), and at least two advanced science courses that focus in one of the following areas (in some circumstances, courses from two areas may be combined):
         1. Cognitive Systems
         2. Psychopathology
         3. Human Evolutionary Biology
         4. Child Development and the Brain
         5. Computational Neuroscience
         6. Neurobiology
            Students pursuing the MBB track are also expected to participate in the University-wide MBB research milieu, including a non-credit senior year seminar for MBB thesis writers.

Technology, Information, and Society

Basic Requirements: 12 courses (48 credits)

1. Required courses:
   1. History of Science 100: Knowing the World: Introduction to the History of Science.
   2. Four courses in the history of science and technology designed to study the larger historical, ethical, and social implications of technology, engineering, and information in the modern world. Two of the four courses may be taken in the General Education program, but two should normally be at least 100-level courses in the History of Science department. Normally, one of the courses may be taken in an area outside the primary focus (e.g., history of medicine).
   3. Five courses in computer science or an area of engineering taught in the College (bioengineering, electrical engineering, mechanical engineering, environmental science and engineering). No more than two may be introductory. Note: Normally, students will begin with a foundational course recommended by the relevant science department and then take a minimum of four additional courses.
   4. Tutorials:
1. **Sophomore year**: History of Science 97 (one term) required, group tutorial. Letter-graded.
2. **Junior year**: History of Science 98 (one term) required. Letter-graded.
3. **Thesis**: None.
4. **General Examination**: None.
5. **Other information**:
   1. Two non-letter graded courses, including relevant Freshman Seminars taught by department faculty, may count for concentration credit.
   2. Students may elect to study abroad during their junior year. The department will count up to two approved courses out of residence towards concentration requirements. Please consult with the Director of Undergraduate Studies or the Manager of Student Programs for more information.

**Technology, Information, and Society**

**Requirements for Honors Eligibility**: 14 courses (56 credits)

1. **Required courses**:
   1. History of Science 100: Knowing the World: Introduction to the History of Science.
   2. Four courses in the history of science and technology designed to study the larger historical, ethical, and social implications of technology, engineering, and information in the modern world. Two of the four courses may be taken in the General Education program, but two should normally be at least 100-level courses in the History of Science department. Normally, one of the courses may be taken in an area outside the primary focus (e.g., history of medicine).
   3. Five courses in computer science or an area of engineering taught in the College (bioengineering, electrical engineering, mechanical engineering, environmental science and engineering). No more than two may be introductory. Note: Normally, students will begin with a foundational course recommended by the relevant science department and then take a minimum of four additional courses.

2. **Tutorials**:
   1. **Sophomore year**: History of Science 97 (one term) required, group tutorial. Letter-graded.
   2. **Junior year**: History of Science 98 (one term) required. Letter-graded.
   3. **Senior year**: History of Science 99ab (two terms) required. Preparation of senior honors thesis; normally, this will deal with some historical question to do with technology, information, and society, broadly understood. Graded Sat/Unsat.
   4. **Thesis**: Required.
4. **General Examination**: None.
5. **Other information**:
   1. **Pass/Fail**: Two non-letter graded courses, including relevant Freshman Seminars taught by department faculty, may count for concentration credit.
   2. **Study Abroad**: *Students may elect to study abroad during their junior year. There is also the possibility of receiving two courses worth of credit for participation in a summer study abroad program led by a member of the department. Please consult with the Director of Undergraduate Studies or the Manager of Student Programs for more information.*

**Technology, Information, and Society**

**Non-thesis Option**: 13 courses (52 credits)

1. **Required courses**: Same as **Basic Requirements**.
Tutorials: Same as Basic Requirements.

Thesis: None.

General Examination: None.

Other information: Same as Basic Requirements, plus the following:

Minimum concentration GPA: Students must have a concentration GPA equivalent to the College-wide cut-off for degrees Magna cum Laude in Field. Concentration grade-point averages will be calculated from a student’s best twelve courses that meet the requirements, including final semester grades.

One graduate-level course: Students must successfully complete (with a minimum B+ grade) at least one graduate-level (i.e., 200-level) course taught by a member of the History of Science faculty or in an appropriate other department (e.g., History). This requirement can also be met by completing a graduate-level track of work, as determined by the faculty instructor, offered within a 100-level course. The requirement is normally fulfilled in the senior year.

Determination of Departmental Honors: A degree recommendation of Honors (not High or Highest Honors) will be awarded to students who meet these requirements.

Advising

During AY 2017-2018, Professor Alex Csiszar will be Acting Director of Undergraduate Studies and has overall responsibility for advising in the concentration. He is also available for individual consultation (acsisz@fas.harvard.edu). Students seeking advice on course selection, or any other aspect of the concentration, should first contact Alice Belser, the Manager of Student Programs (ajbelser@fas.harvard.edu). Faculty in charge of students' history of science tutorials also function as advisers: sophomores may consult with the faculty in charge of the sophomore tutorial; juniors with faculty responsible for their junior tutorials; and seniors with the senior tutorial course head.

For up-to-date information on advising in History and Science, please see the Advising Programs Office website.

How to Find Out More

For more information, students can also contact the Manager of Student Programs, Alice Belser, ajbelser@fas.harvard.edu, 617-495-3742, Science Center 355, or the Acting Director of Undergraduate Studies, Professor Alex Csiszar, acsis@fas.harvard.edu, Science Center 458. The Department’s main website is histsci.fas.harvard.edu.

Enrollment Statistics

Number of Concentrators as of December

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Overview

Have you ever wondered about:

- The ethical issues surrounding new medical technology (such as stem cells)
- The politics of climate change
- The new social forms surrounding computers
- The interaction between biotechnology and the law
- The history of modern technology

The major in Science & Technology Studies aims to further students’ understanding of the social and cultural meanings of science and technology. Ideal for students pursuing careers in law, public policy or
Major Requirements

PREREQUISITES:

Note: No AP Credits are allowed to fulfill any A&S Distribution Requirements

I. Completion of one S&TS course.

There are no other prerequisites, but students should plan to fulfill the science (PBS) and quantitative (MQR) requirements of the College of Arts and Sciences early in their college careers in order to be in a position to take additional science or engineering courses as outlined below.

NOTE: It is the student’s responsibility to check the college requirements.

S&TS COURSE REQUIREMENTS:

Note: All courses used to fulfill major requirements must be taken for a letter grade, and must be a C- or above. One course may not be used to fulfill two major requirements.

II. Core Course: One course: STS 211

III. Three additional 2000 level courses.

IV. Additional S&TS courses to total 37 credit hours in the major. Four of these courses must be 3000 level or above and a minimum of two of these must be 4000 level or higher.

V. Additional S&TS Courses (Additional courses(s) chosen from the S&TS list to total 37 credit hours in the major.)

VI. Science Requirement: Two courses in natural sciences or engineering (including computer science) in addition to the science requirement of the College of Arts and Sciences. Choice of these courses should be made in consultation with the student’s major advisor.

NOTE: All courses chosen to fulfill Major requirements must be taken for a letter grade.

MAJOR FORMS:

- Course Checklist (Major Requirements)
- STS Course List
- Petition for STS Off-Campus Credit
- Petition for STS On-Campus Credit
- Suggested Curriculum
Application Forms

Please print out and submit your completed Science & Technology Studies Major Application to 303B Morrill Hall by Friday, September 8, 2017.

- Science & Technology Studies Application
- Science & Technology Studies Guidelines

*For a listing of Science & Technology Studies Courses, click here, or to pick up a paper version please stop by our main office, 303 Morrill Hall.*

Minor

The undergraduate minor in Science & Technology Studies (S&TS) is designed for students who wish to engage in a systematic, interdisciplinary exploration of the role of science and technology in modern societies. The minor is intended for students with varied academic interests and career goals. Majors in the natural sciences and engineering have an opportunity to explore the social, political, and ethical implications of their selected fields of specialization, while students majoring in the humanities and social sciences have a chance to study the processes, products and impacts of science and technology from multiple disciplinary perspectives.

To satisfy the requirements for the S&TS minor, students must complete, with a letter grade of C- or above, a minimum of four courses, totaling 15 credits, selected from the course offerings listed for the major, excluding first-year writing seminars. The four courses must include one, 2000 level S&TS course and at least one course at the 3000 or 4000 level. No more than one course can be at the 1000 level. Students must apply by the end of week 3 in their final semester and declare the minor by the end of week 7 in their final semester.

Interested students may obtain further information about courses and a list of course descriptions here, or by contacting the S&TS undergraduate office, 303 Morrill Hall (607-255-3810).

*S&TS Minor Information

*S&TS Minor Application

Honors Program

The Honors Program is designed to provide independent research opportunities for academically talented Science &Technology Studies majors. Students who enroll in the honors program are expected to do independent study and research, with faculty guidance, on issues in science & technology studies. Students who participate in the program should find the experience intellectually stimulating and rewarding whether or not they intend to pursue a research career.

**SELECTION OF STUDENTS:**

http://sts.cornell.edu/sts-major
S&TS majors are considered for entry into the honors program at the end of the second semester of their junior year. Application forms for the honors program are available in the S&TS office, 303 Morrill Hall. To qualify for the S&TS honors program, students must have an overall Cornell cumulative grade-point average of at least 3.00 and a 3.30 cumulative GPA in courses taken for the major. Additionally, the student must have formulated a research topic, and have found a project supervisor and a second faculty member willing to serve as the advisors. Both must hold academic appointments at Cornell, and at least one must be a member of S&TS. Applications will be reviewed by a committee headed by the director of undergraduate studies, who will notify students directly of the outcome.

Students will be permitted to register for the honors program only by permission of the department. Students must register for the total credits (8) for the whole year, 4 each semester in S&TS 4991, The Honors Project I and II. At the end of the first semester, the student will receive a grade of "R" for satisfactory progress. The grade recorded at the end of the second term evaluates the student's performance in the course for the entire year.

If, after admission to the honors program, a student fails to maintain a high scholastic average, or for any other reason is considered unsuited for honors work, the student reverts to candidacy for the regular Bachelor's degree. The student who does not continue in the honors program must change the first semester to Independent Study in order to receive a grade, and is not eligible for the honors degree.

**PROGRAM REQUIREMENTS:**

Students are required to complete two semesters of honors project research and to write an honors thesis. The project must include substantial research and the completed work should be of wider scope and greater originality than is normal for an upper-level course.

The student has primary responsibility for constituting a committee of two faculty advisors, formulating ideas, developing the proposal, carrying out the study, and preparing a suitable thesis. Honors projects will be carried out under the direction of the two faculty advisors mentioned above. Both must be members of the Cornell faculty; at least one must be a member of S&TS. The project supervisor should be expert in the topic and willing to serve as the primary advisor. In the second semester of the senior year, the DUS will appoint a third reader of the completed honors thesis.

Students must register for the total credits (8) for the whole year, 4 credits each semester in S&TS 4991, The Honors Project I and II. At the end of the first semester, the student will receive a grade of "R" for satisfactory progress. The grade recorded at the end of the second term evaluates the student’s performance in the course for the entire year. Students should note that S&TS 4991 may not be used to fulfill any major requirements. The student and the thesis advisor must reach clear agreement at the outset as to what sort of work will need to be completed during the first semester. Minimally an honors thesis outline and bibliography should be accomplished. At the end of the first semester, the student will receive a grade of "R" for satisfactory progress. The advisors, in consultation with the director of undergraduate studies, will evaluate whether or not the student should continue working on an honors project. Students who do continue in the honors program for the second semester will receive a letter grade at the end of their final term for the entire year whether or not they complete a thesis and whether or not they are recommended for honors.
Students should meet regularly with their project supervisor during the period of research and writing for the honors thesis. The responsibility for scheduling these meetings, and for carrying out the research in timely fashion, rests with the student. Advisors are expected to make themselves available for discussion and to offer advice on the plan of research, as well as provide critical and constructive comments on the written work as it is completed. They are not expected, however, to pursue students to ensure that the research and writing are being done on schedule.

THE HONORS THESIS:

There is no prescribed length for a thesis, since different topics may require longer or shorter treatment, but it should normally be in the range of 70 - 100 double-spaced typed pages. The thesis must be completed in a form satisfactory for purposes of evaluation and submitted by April 15* to the two thesis advisors and to one other faculty member appointed by the director of undergraduate studies. The candidate must meet with the three readers for a formal defense of the thesis by April 29. *

One copy of the completed and defended thesis (suitably bound in a plastic or hard-backed cover), together with the advisors’ recommendations, must be submitted to the director of undergraduate studies by May 15. *

Following the formal thesis defense, the thesis advisors will submit to the director of undergraduate studies a recommendation to include: 1) the evaluation of the honors thesis by the three readers; 2) an evaluation of the student’s academic record in the Science & Technology Studies major; and 3) a recommendation for or against awarding honors, as well as a recommendation for the level of honors. As the director of undergraduate studies may have little knowledge of the subject area of the thesis, recommendations should be carefully prepared by the committed to help ensure consistency within the Honors Program. If there is disagreement among the readers, the director of undergraduate studies will make the final decision after consultation with the interested parties.

SUMMARY OF IMPORTANT DATES:

- September 2*: Application for honors program submitted
- April 15*: Thesis completed in a form satisfactory for evaluation and submitted to the three readers
- April 29*: Thesis defense accomplished
- May 13*: Bound copy of completed and defended thesis submitted to director of undergraduate studies

*If these dates fall on a weekend, the deadline will be the previous Friday.*

- S&TS Honors Program Application
- S&TS Honors Program Information Sheet

Contacts
Undergraduate Program Coordinator, Science & Technology Studies Major:
Stacey Stone
303B Morrill Hall, Cornell University, Ithaca, NY 14853 USA
Telephone: (607) 25 -
   I: sms252@cornell.edu

Director of Undergraduate Studies:
Professor Rachel Prentice (rep35@cornell.edu)

Morrill Hall, Ithaca, New York 14853
Tel: 607-255-3810 • Fax: 607-25 -
department@cornell.edu

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Biology & Society Major

Overview

The Biology & Society Major is designed for students who wish to combine training in biology with perspectives from the social sciences and humanities on the social, political and ethical aspects of modern biology. Many of the most critical social concerns of our time -- food and population; impact of genetic engineering and new medical technologies; testing for drugs; AIDS and genes; the influence of heredity versus environment on human behavior; environmental quality; and ethical, legal and social aspects of modern medical practice -- are innately biological. At the same time, each of these issues is inherently a social concern and involves complex relations between biological and sociocultural forces. The Biology & Society major is intended to provide the skills and perspectives to enable its students to systematically confront these and many other social-biological issues. For a detailed description of the Major, see the section on Biology & Society in the Courses of Study.
Each student’s program incorporating the requirements of the major is planned in consultation with a faculty member and is designed to accommodate individual goals and interests. Students who complete the requirements for the Biology & Society major leave Cornell with well-developed writing and analytical skills and with the ability to confront complex issues. Biology & Society graduates are thus equipped to enter a variety of careers. Students have found the Major is also excellent preparation for law, medicine, health services administration, and other professional schools and for graduate programs in genetic counseling, nutrition, clinical psychology, public health, environmental studies, anthropology, sociology or other related fields. Students have gone on to successful careers in the healthcare industry, legal profession, policymaking, scientific research, and many other exciting professions.

Requirements

*Requirements for the major are listed below. A full description and listings of courses that satisfy the requirements can be obtained in 303 Morrill Hall. Also refer to the section on Biology & Society in Courses of Study.*

**Biology & Society Requirements:**

Starting with the class of 2014, we will no longer accept AP Biology to fulfill the introductory biology requirement.

- Introductory biology (BioG 1105/1106; or two of the following: BioEE 1610 or BioSM 1610, BioEE 1780 or BioSM 1780, BioG 1440 or BioG 1445, or BioMG 1350. Students are not required to take BioG 1500, but may wish to for a lab experience. BioG 1105/1106 is no longer offered. A minimum grade of C- in each of the two Intro Biology courses or proven success in biology foundation breadth is required.

- College calculus (one course)
Ethics (one course)

Two social sciences/humanities foundation courses

Three biology foundation courses

One biology depth course

Statistics (one course)

Core course

Five theme courses (a coherent group of five courses relevant to the student’s special interest in Biology and Society, including a senior seminar that serves as a capstone course for the major).

No single course may satisfy more than one major requirement. With the exception of the four elective courses in the theme (2 biology electives and 2 humanities/social sciences electives), all courses must be chosen from the Biology & Society official course list. Courses used for the Major must be at least 3 credit hours, at least 2000-level (except Intro Biology and Calculus requirements, Math 1710, NS 1150, NS 1220, BSOC 1941 and 1942), taken for a letter grade, and students must receive at least a C- as a final grade. Students should develop their theme and select their courses in consultation with a member of the Biology & Society faculty. A list of faculty is available in 303 Morrill Hall.

Independent Study and Honors Research:

Majors are encouraged to do independent study or honors research. Projects under the direction of a Biology & Society faculty mentor can be developed as a part of the program of study within the student’s concentration area. Further information can be found in Courses of Study or is available in the Biology & Society office, 303 Morrill Hall. NOTE: At this time Biology & Society honors research is available to majors from the Colleges of Agriculture and Life Sciences, Arts and Sciences, and Human Ecology. Human Ecology students should contact Professor Margaret Frey (137 Human Ecology Building, 255-1937) for information.

Major Forms

- Course Checklist (Major Requirements)
- BSOC Course List
- Petition for BSOC Off-Campus Credit
- Petition for BSOC On-Campus Credit
- Suggested Curriculum
- Approved NS 1150/NS 1220 Depth Courses

Applying to the Major

Students must have completed a year of college-level biology or two entry level biology courses and submit an application during their sophomore year. (See requirements for minimum grade.) Students in the process of completing this prerequisite may be admitted to the Major on a provisional basis. It is the
student’s responsibility to assure that final acceptance is granted on completion of the introductory biology requirements. Although only introductory biology, or its equivalent is a prerequisite for acceptance, students will find it useful to have completed some of the other requirements (see course checklist) by the end of their sophomore year. Juniors are considered on a case-by-case basis. Upper-division applicants should realize the difficulties of completing the Major requirements in less than two years.

**NOTE: Students in the Colleges of Human Ecology and Agriculture and Life Sciences are provisionally admitted to the major during their freshman year (or as transfer students). Full acceptance is contingent upon submission of an application during the sophomore year.**

The application includes:

1. a one to two page statement explaining your intellectual interests in the Biology & Society major and why the major is consistent with your academic goals and interests
2. a selected theme in the Major
3. a tentative plan of courses fulfilling Biology & Society requirements, including courses you have taken and those you plan to take
4. a transcript of work taken at Cornell University, or elsewhere, current as of the date of application

Applications are reviewed by the faculty admissions committee twice a year, once each during the fall and spring semesters. A faculty advisor is assigned on admittance to the Major.

The Major is offered to students enrolled in the Colleges of Arts and Sciences, Human Ecology, and Agriculture and Life Sciences. The Major is administered by a committee of faculty members representing various disciplines in the biological and social sciences and the humanities. Approximately 70 faculty from three colleges serve as advisors to Biology & Society Majors. The Major is coordinated for students in all colleges through the Biology & Society office. Students can get information, specific course requirements, and application procedures for the major from the office located in 303 Morrill Hall. Faculty advisors are available to discuss the major and requirements with you.

Because the major is multidisciplinary, students must attain a basic understanding of each of the several disciplines it comprises. These include introductory courses in three of the nine fields of biology (see checklist), ethics, history or philosophy and statistics. In addition, majors are required to take a core course and must develop a theme: a coherent and meaningful grouping of five courses representative of their special interest in Biology & Society. Students should develop the theme and select the courses in consultation with a member of the Biology & Society faculty. (A list of faculty is available from the Biology & Society office).

**Please print out and submit your completed Biology & Society Major Application to 303B Morrill Hall by Friday, September 8, 2017.**

Applications received by this deadline will receive priority attention for obtaining a Biology & Society faculty advisor before pre-enrollment begins.
Application Forms

- Biology & Society Application
- Biology & Society Guidelines
- Acceptance of Non-Arts Credit Form (for Arts & Sciences students only)

For a listing of Biology & Society Courses, click here, or to pick up a paper version, please stop by our main office, 303 Morrill Hall.

Honors Program

The Honors Program is designed to challenge academically talented undergraduate students whose major is Biology & Society. Students who enroll in the honors program are given an opportunity, with faculty guidance, to do independent study and research dealing with issues in biology and society. Students participating in the program should find the experience intellectually stimulating and rewarding.

Selection of Students:

Biology & Society majors are considered for entry into the honors program at the end of the second semester of the junior year. Application forms for the honors program are available in the Biology & Society office, 306 Rockefeller. The Biology & Society honors program is available to Biology & Society majors from the Colleges of Arts and Sciences and Agriculture and Life Sciences. Biology & Society majors in the College of Human Ecology must be selected by an honors committee within their college. To qualify for the Biology & Society honors program, students must have an overall Cornell cumulative grade-point average of at least 3.30, have formulated a research topic, and have found a project supervisor and a second faculty member willing to serve as advisors. Both must hold academic appointments at Cornell, and at least one must be a member of Biology & Society. Applications will be reviewed by a committee headed by the director of undergraduate studies, who will notify students directly of the outcome. Students will be permitted to register for the honors program only by permission of the department. Students must enroll for two semesters, each time for four credits. At the end of the first semester, the student will receive a grade of “R” for satisfactory progress. The grade recorded at the end of the second term evaluates the student’s performance in the course for the entire year. CALS and CHE students may enroll in ALS 4991 and HE 4991 the same way to receive credit from the College of Agriculture and Life Sciences and the College of Human Ecology, respectively.

If, after admission to the honors program, a student fails to maintain a high scholastic average, or for any other reason is considered unsuited for honors work, the student reverts to candidacy for the regular Bachelor’s degree. The student who does not continue in the honors program must change the first semester to Independent Study in order to and receive a grade.

Students are required to complete two semesters of honors project research and to write an honors thesis. The project must include substantial research and the completed work should be of wider scope and greater originality than is normal for an upper-level course. Additionally, as part of the first semester of
honors work (BSOC 4991, ALS 4991, or HE 4991), students are required to attend an honors seminar, which covers basic research skills. A preliminary paper and bibliography on the student's project is due by the end of the fall semester.

**Program Requirements:**

The student has primary responsibility for constituting a committee of two faculty advisors, formulating ideas, developing the proposal, carrying out the study, and preparing a suitable thesis. Honors projects will be carried out under the direction of the two advisors mentioned above. The project supervisor should be expert in the topic and willing to serve as the primary advisor. In the second semester of the senior year, the director of undergraduate studies will appoint a third reader of the completed honors thesis.

Students must register for the total credits (8) for the whole year, 4 credits each semester in Biology & Society/ALS 4991, Honors Project I and II. Students should note that BSOC/ALS/HE 4991 may not be used to fulfill any major requirements. The student and the project supervisor must reach clear agreement at the outset as to what sort of work will need to be completed during the first semester. Minimally an honors thesis outline and bibliography should be accomplished. At the end of the first semester, a grade of "R" will be assigned to note satisfactory progress. The advisors, in consultation with the director of undergraduate studies, will evaluate whether or not the student should continue working on an honors project. The student who does not continue in the honors program must change the first semester to Independent Study in order to receive a grade. The grade recorded at the end of the second term evaluates the student's performance in the course for the entire year.

Students should meet regularly with the project supervisor during the period of research and writing for the honors thesis. The responsibility for scheduling these meetings, and for carrying out the research in timely fashion, rests with the student. Advisors are expected to make themselves available for discussion and to offer advice on the plan of research, as well as provide critical and constructive comments on the written work as it is completed. They are not expected, however, to pursue students to ensure that the research and writing are being done on schedule.

**The Honors Thesis:**

There is no prescribed length for a thesis, since different topics may require longer or shorter treatment, but the thesis should be a substantial body of work. We have found that the thesis is normally in the range of 70 - 100 double-spaced typed pages. The thesis must be completed in a form satisfactory for purposes of evaluation and submitted by April 15* to the two thesis advisors and to a third faculty member appointed by the director of undergraduate studies. The candidate must meet with the three readers for a formal defense of the thesis by April 29. * CALS students must follow the requirements set forth by Dean Viands for formatting, binding, and submitting their honors thesis.

One copy of the completed and defended thesis (suitably bound in a plastic or hard-backed cover), together with the advisors’ recommendations, must be submitted to the undergraduate coordinator in 303B Morrill Hall by May 15. *
Following the formal thesis defense, the thesis advisors will submit to the director of undergraduate studies a recommendation to include: 1) the evaluation of the honors thesis by the three readers; 2) an evaluation of the student’s academic record in the Biology & Society major; and 3) a recommendation for or against awarding honors, as well as a recommendation for the level of honors.

As the director of undergraduate studies may have little knowledge of the subject area of the thesis, recommendations should be carefully prepared to help ensure consistency within the Honors Program. If there is disagreement among the readers, the director of undergraduate studies will make the final decision after consultation with the interested parties.

Summary of Important Dates:

- **Last week of second semester junior year**: Application for honors program submitted to 303B Morrill Hall.
- **April 15***: Thesis completed in a form satisfactory for evaluation and submitted to the three readers.
- **April 29***: Thesis defense accomplished.
- **May 13***: Bound copy of completed and defended thesis submitted to the undergraduate coordinator in 303B Morrill Hall.

*If these dates fall on a weekend, the deadline will be the previous Friday.*

- Biology & Society Honors Program Application
- BSOC Honors Program Information Sheet

Contacts

**Undergraduate Program Coordinator, Biology & Society Major:**
Stacey Stone
303B Morrill Hall, Cornell University, Ithaca, NY 14853 USA
Telephone: (607) 255-6047
Email: sms252@cornell.edu

**Director of Undergraduate Studies:**
Professor Rachel Prentice (rep35@cornell.edu)

**Agriculture & Life Sciences Advising Coordinator:**
Professor Randy Wayne (row1@cornell.edu)

**Human Ecology Advising Coordinator:**
Professor Margaret Frey (mfw24@cornell.edu)
Science, Technology, and Society
Vassar College

About

Today at Vassar, the multidisciplinary program in Science, Technology, and Society engages broadly the conversation on the intersections between science, technology, and a breadth of social, political, historic, economic and philosophical contexts which shape, and in turn are shaped by, science and technology. More specifically, the curriculum in Vassar’s STS Program is designed to enable students to pursue three objectives:

1. To understand the central role of science and technology in contemporary society.
2. To examine how science and technology reflect their social, political, philosophical, economic and cultural contexts.
3. To explore the human, ethical, and policy implications of current and emerging technologies.

Over the past few years, our faculty members have come to the program from the departments of Anthropology, Biology, Chemistry, Earth Sciences and Geography, Economics, Philosophy, Political Science, Psychology, and Sociology, as well as STS. We have also enjoyed the expertise of colleagues outside the college, in the fields of bioethics and law, who have taught seminars in their respective fields.

Contact

Science, Technology, and Society Program

Phone
(845) 437-7495

Office
Old Laundry Building, 211

Email
sts@vassar.edu

Vassar College Box
264

Science at Vassar

- Research & Teaching
- Resources
- Bridging: Celebrating the Integrated Science Commons

https://sciencetechnologyandsociety.vassar.edu/about/
Science, Technology and Society Program

**Director:** Nancy Jo Pokrywka, fall semester;
David Esteban, spring semester;

**Steering Committee:** Leroy Cooper (Biology), David Justin Esteban (Biology), Marque Miringoff (Sociology), M. Mark (English), José Perillán (Physics and Astronomy), Nancy Jo Pokrywka (Biology), Jill S. Schneiderman (Earth Science), Christopher White (Religion);

**Participating Faculty:** Leroy Cooper (Biology), Brian Daly (Physics and Astronomy), Eve Dunbar (English), David Justin Esteban (Biology), Lucille Lewis Johnson (Anthropology), Jamie T. Kelly (Philosophy), Jennifer Kennell (Biology), M. Mark (English), Marque-Luisa Miringoff (Sociology), José Perillán (Physics and Astronomy), Nancy Jo Pokrywka (Biology), Miriam Rossi (Chemistry), Paul Ruud (Economics), Jill S. Schneiderman (Earth Science), Eric Trump (German), Christopher White (Religion), Douglas Winblad (Philosophy).

On leave 2017/18, first semester
On leave 2017/18, second semester

The multidisciplinary program in Science, Technology, and Society is designed to enable students to pursue three objectives: a) to understand the central role of science and technology in contemporary society; b) to examine how science and technology reflect their social, political, philosophical, economic and cultural contexts; and c) to explore the human, ethical and policy implications of current and emerging technologies.

Students interested in the program are urged to plan for declaration as early as possible in their college careers. Freshmen and sophomores should talk with the director concerning courses to be taken in the freshman and sophomore years.

**Programs**

**Major**

- Science, Technology and Society Major

**Courses**

**Science, Technology and Society: I. Introductory**

- STS 105 - 20th Century Revolutions in Physics
- STS 111 - Science and Justice in the Anthropocene
- STS 131 - Genetic Engineering: Basic Principles and Ethical Questions
- STS 146 - Relatively Uncertain: A History of Physics, Religion and Popular Culture
- STS 160 - The Culture and Chemistry of Cuisine
- STS 172 - Microbial Wars
- STS 186 - Philosophy of Medicine

**Science, Technology and Society: II. Intermediate**

- STS 200 - Conceptualizing STS: Theories and Practice
- STS 202 - History of Modern Science and Technology
- STS 220 - The Political Economy of Health Care
- STS 222 - Bioethics and Human Reproduction
- STS 226 - Philosophy of Science
- STS 231 - Tools and Human Behavior
- STS 234 - Disability and Society
- STS 235 - Introduction to German Cultural Studies
• STS 245 - Medicine, Health and Diseases in East Asia
• STS 247 - Albert Einstein
• STS 254 - Bio-Politics of Breast Cancer
• STS 255 - Introduction to Forensic Chemistry
• STS 258 - Black Holes, Human Clones and Nanobots: The Edge of Science
• STS 260 - Health, Medicine, and Public Policy
• STS 266 - Genetic Revolution & Identity
• STS 267 - Environmental and Natural Resource Economics
• STS 268 - Current and Emerging Issues in Public Health
• STS 270 - Drugs, Culture, and Society
• STS 273 - The New Economy
• STS 277 - Feminist Approaches to Science and Technology
• STS 284 - The Transplanted Body
• STS 290 - Field Work
• STS 298 - Independent Work

Science, Technology and Society: III. Advanced

• STS 300 - Senior Thesis
• STS 301 - Senior Seminar
• STS 302 - History of Science and Technology Since World War II
• STS 310 - Seminar in Analytic Philosophy
• STS 323 - History of Geological Thought: 1690-1980
• STS 331 - Topics in Archaeological Theory and Method
• STS 340 - Controversies in Context: Technoscientific Futures
• STS 350 - Comparative Studies in Religion
• STS 352 - Medicine and (Dis)order: A Social Geography of Healthcare
• STS 353 - Bio-Social Controversy
• STS 360 - Issues in Bioethics
• STS 367 - Mind, Culture, and Biology
• STS 370 - Feminism and Environmentalism
• STS 375 - Gender, Race, and Science
• STS 380 - Techno-Orientalism: The Asian Connection to Science and Technology
• STS 382 - Renewable Energy
• STS 385 - Technology, Ecology, and Society
• STS 399 - Senior Independent Work
The interrelation of scientific and technological systems with social and political life is perhaps the most pressing issue of modern society. The concentration in Science, Technology, and Society (STS) provides a rigorous approach to this area in conjunction with a primary discipline in the social sciences, arts, literature, or the natural sciences. Students can use the resources of STS for the extra-disciplinary exploration often demanded by contemporary issues in technology and science, while the primary academic or scientific field – for instance anthropology, physics, or music – provides a base of methodological skills and perspective. One benefit of this structure is that STS can provide the institutional grounding for interests — such as science fiction, non-fiction science writing, the economy of social networking, toxicology or even game design — that previously had no ready 'home' in a primary program. Please note that the STS program incorporates the previous program in the "History and Philosophy of Science" (HPS), which is now a field of study within it.

The STS program hopes to foster a critical community engaged in understanding science and its relation to society, and to promote contact among students across different fields and divisions. Students in STS are encouraged, but not required, to have a practical 'hands-on' technological, artistic, or a policy component to their education, preferably in collective projects in their junior year. Recent suggestions that might form models for this include the construction of radio transmission equipment [Radio Free Bard], the development of Bio-diesel equipment for school vehicles, or the study of construction and engineering techniques for work in developing countries. Due to its interdisciplinary nature, students in STS are encouraged to take tutorials in fields pertaining to areas of interest for such projects, but should plan ahead so that they have taken any introductory courses in an area where they may later need to take a specific tutorial. A student interested in nautical design, for instance, could take basic physics or calculus before approaching faculty for a tutorial on designing a boat.

Senior projects in STS are focused on the requirements of the primary program area, and thus will principally be written or artistic products, or laboratory investigations. Senior Projects should, however, contain broader questions raised by STS. Such questions might include: How can developments in science and technology best be conveyed to the public or understood aesthetically? Can or should society or government control the development of technology or 'big science'? How do professional expectations, funding, or cultural norms influence particular research programs or laboratory situations? A senior project in biology and STS, for instance, might look not only at a particular biological problem of epidemiology, but at the economic, political or public health dimension of disease prevention surrounding the specific disease.
General Course Requirements

General Course Requirements for the Concentration in STS include:

1. Three courses in the "Science, Mathematics and Computing" division, preferably with a one year sequence in one field. AP science courses may count towards this requirement
2. Two 'core' courses in STS
3. Two further STS cross-listed courses, one of which will be outside of the student's home division.
4. A methodology class, usually in policy analysis or statistics, is recommended but not required.
5. A senior project informed by themes relating to the social role of science and technology as it relates to the topic of the student's primary concentration.

Due to its nature as a concentration, it is assumed that for many students their 'home' program already covers some of these requirements.

Moderation requirements:

1. Two courses in the SMC division (AP science courses may count towards this requirement)
2. One core course in STS
3. A written description of the student's specific plan of study in the upper college and the particular sequence of courses the student is interested in. Slight modification of the core requirements (e.g. a two course math sequence could be considered at this point.
4. Moderation at the same time as moderation into the 'primary' division is encouraged, although this can also be accomplished at a different time.

The student's plan for a sequence of courses at moderation will be particularly important in more established fields of interest within STS such as the "History and Philosophy of Science," and "Non-Fiction Science Education and Documentation." In these cases, students would be required to complete particular key courses in the program. The HPS focus, for instance, would require the student to take additional advanced courses in the history and philosophy of science; the tract in science education and documentation would require a greater number of science courses as well as a suggested internship.

Core Courses

Also see the Courses page for current and cross-listed courses.

The following courses form the present list of the 'core' courses from which students could draw to develop an STS program:

- ECON 265 Development from the Ground Up, Prof. DeSilva
- HIST / PSY 172 History of Medicine and Psychiatry
- HIST 161 Introduction to the History of Technology and Socio-Technical Systems, Prof. Moynahan
- HIST 251 Knowledge and Society in the Scientific Revolution, Prof. Stroup
- PHIL 220 Introduction to the Philosophy of Science, Prof. Shein
- SHP 224 History of Science in the Post-War Period (1950-2000)
- SHP 222 History of Science Before Newton, NS. 222 (3000 B.C.E. to 1700)
- SHP 223 History of Science in the Modern Period (1700-1950)
Core Courses

The following courses form a partial list of the 'core' courses from which students would draw on to develop an STS program. Additional courses are often added for each semester.

- ECON 265 Development from the Ground Up, Prof. DeSilva
- HIST / PSY 172 History of Medicine and Psychiatry, Prof. Arikha
- HIST 161 Introduction to the History of Technology and Socio-Technical Systems, Prof. Moynahan
- HIST 251 Knowledge and Society in the Scientific Revolution, Prof. Stroup
- PHIL 220 Introduction to the Philosophy of Science, Prof. Shein
- SHP 224 History of Science in the Post-War Period (1950-2000), Prof. Skiff
- SHP 222 History of Science Before Newton, NS. 222 (3000 B.C.E. to 1700), Prof. Skiff
- SHP 223 History of Science in the Modern Period (1700-1950), Prof. Skiff
- SHP 227 Philosophy of Science, Prof. Skiff

Partial List of Standing Cross-Listed Courses

- ARTH 113 History of Photography, Laurie Dahlberg
- ARTH 298 The History of the Museum, Susan Merriam
- BIO 125 Global Change, Catherine O'Reilly
- BIO 268 / PHIL 268 Issues in Bioethics
- CHEM 130 Chemistry of the Environment
- CHEM 135 Forensic Chemistry, Prof. Anderson
- CS 103 Great Ideas in Computer Science (and How They Make the Internet Work)
- CMSC 353 Modeling and Simulation, Sven Anderson
- FILM / IA 301 MC:Live Video and Systems of Surveillance, Jacqueline Goss
- FILM 362 Electronic Discourses: Art and the Internet, Jacqueline Goss
- HIST 167 The History of Sexuality
- HIST 280B American Environmental History II: The Postwar Era
- HIST 354 The Invisible World, Prof. Stroup
- HIST 2391, Reason and Passions, Prof. Stroup
- HIST 2500 From Sun Tzu to Suicide Bombing: The Evolution and Practice of Military Strategy, Tactics, and Ethics from Ancient Times to the Present
- HIST 3112 Plague!, Prof. Stroup
- HIST 3341 Infrastructure History: Technology, Society, and the Transformation of Modern Life from Standard Time to the Internet, Prof. Moynahan
- MATH 135 Game Theory, Prof. Halsey
- MATH 137 Mathematics of the Pre-modern Era, Prof. Suzuki
- MATH 322 Operational Research, Prof. Halsey
- MUS 345 Introductory Psychoacoustics, Robert Bielecki
- PSY 348 The Man and the Experiment that Shocked the World: The Work and Legacy of Stanley Milgram, Stewart Levine
- SHP 111 Schroedinger's Cat and All That, Prof. Deady
- SHP 225 Einstein
- SHP 227 Science and Pseudoscience
Technology Studies Concentration

This concentration examines technology and the role it plays in society. Courses provide a bridge between humanities, science, and social studies by integrating material from all three divisions. The study of technology not only crosses the divide between pure and applied science, but also between scientific and social or humanist perspectives on the development and role of technology. Students are required to obtain a grounding in laboratory science and statistics, take at least one foundation course, at least two specific technology courses, participate in an internship in a technological setting, and complete an independent study project or technology seminar, normally during the senior year.

**Concentration requirements: 24 credits as follows:**

### 1. 8 Credits
Take 8 credits from courses in the departments of biology, chemistry, computer science, physics, or psychology, creditable towards those majors. The following courses may also be used for 4 of the 8 credits.

- **MAT 115** - Introduction to Statistics or the cross-listed **SST 115**
- **MAT 209** - Applied Statistics
- **ENV 125** - Introduction to Earth Systems Science with Lab

### 2. Core Course (4 credits)

- **TEC 154** - Evolution of Technology

### 3. At least 8 credits of specific technology courses

Specific technology courses are often selected from the following. Upon approval by the concentration chair, other specific technology courses, such as special topics courses, can be used to meet this requirement.

- **ANT 252** - Culture and Agriculture
- **ANT 261** - Agriculture, Religion, and Empire: Old World Prehistory
- **ART 246** - Digital Media, and other 200-level Art courses as approved
- **CSC 105** - The Digital Age
- **CSC 214** - Computer and Network Security
- **CSC 232** - Human-Computer Interaction
- **CSC 322** - Team Software Development for Community Organizations
- **MUS 219** - Electronic Music
- **PHY 180** - Bridges, Towers, and Skyscrapers
- **PHY 220** - Electronics
- **SOC 265** - Sociology of Health and Illness
- **SST 125** - Introduction to Geographic Information System (GIS) Analysis
- **THD 115** - Theatrical Design and Technology

### 4. A technology-related seminar or independent study project (4 credits)

The concentration also includes two noncredit-bearing requirements.

### 5. An internship in technology

The internship may be completed during the summer or academic year, either locally or at an approved off-campus program with internship and seminar components. The internship must be approved in advance by the concentration chair.

### 6. A public presentation

Students are expected to give a public presentation in a class or colloquium, drawing upon the internship experience and the seminar or independent study project.

**Technology Studies Courses**

**Schedule of Courses**
Science, Technology and Society

Return to: Departments, Programs and Areas of Study

Professor Richard McKirahan, program coordinator

Steering Committee: Davis, McKirahan, Perini\(^3\), Worthington\(^3\)

Anne Tessier, academic coordinator

Science, technology and society (STS) is an interdisciplinary field that studies the conditions under which the production, distribution and utilization of scientific knowledge and technological systems occur and traces the consequences of these activities upon different groups of people. The intercollegiate program brings together courses taught in a variety of departments, and is divided into three principal disciplinary areas that are applied to science and technology: history, philosophy and social science (anthropology and public policy analysis). Courses explore the effects of science and technology on society and culture, and vice versa. General topics include the politics of socio-technical systems; analysis of scientific methodology in terms of objectivity and rationality; the social factors involved in producing scientific knowledge and technological change; moral and policy analysis of technological systems. More specifically, courses cover topics such as concepts of health, disease and disability; the political economy of pollution; the culture of the scientific laboratory; theories of race, eugenics and genetics engineering; and social networking and the Internet.

Students majoring in STS are well prepared to pursue graduate study in related fields and also have a solid foundation for work as science journalists, policy researchers and advisors, science educators, design and business consultants and advocates of change around issues such as gender and science, renewable energy and the social effects of the information revolution. In addition, STS is an excellent academic background for students intending to pursue careers in medicine, law, business and education.

STS may be joined with public policy analysis (PPA) in the STS/PPA Major. There is also an STS/gender & women’s studies major (see the Gender and Women’s Studies Program section of this catalog).

\(^1\)On leave fall 2017 \(^2\)On leave spring 2018 \(^3\)On leave 2017-18

Science, Technology and Society Major

http://catalog.pomona.edu/preview_entity.php?catoid=24&ent_oid=1421&returnto=4880
Requirements for the Major in Science, Technology and Society

1. Four “science and technology practice” courses (science and/or engineering)
   STS is about knowledge-making practices, so students should experience those practices directly; laboratories and mathematics are especially significant in producing scientific knowledge and therefore important “ways of knowing” that students should experience in the process of learning about a particular scientific or engineering field.
   a. One semester of mathematics at the level of first-semester calculus or higher. This requirement may be filled by a comparably advanced course in statistics or principles of computing.
   b. One semester of a laboratory science.
   c. Three of the courses must be in one field, count toward a major in that field or be pre-requisites to courses that count toward a major in that field.

2. Four “context and theory” courses
   These courses explicitly examine science and technology as social institutions, and explore the theories, concepts and methods one encounters in doing so.
   a. Two historical studies courses from STS 080 PO, STS 081 PZ, HIST 082 HM
   b. One philosophy of science course from PHIL 007 PO, PHIL 103 PO or PHIL 104 PO or PHIL 104 PZ
   c. One “social science approaches” course from STS 010 HM, POLI 136 PO, POLI 149 PO or ANTH 111 HM

3. Three “concentration” courses
   This requirement helps students develop their individual interests and are selected with approval of the STS advisor. Students might concentrate in a type of STS issue such as a technological controversy, policy problem, or application; or they may seek depth in one of the main disciplinary areas of STS (history, philosophy, anthropology or public policy analysis). One of these courses may be replaced with a senior thesis. A thesis student chooses a member of the STS field group as a primary mentor in the research project, and will also need a second reader; one of these must be a member of the Pomona faculty. The student’s program must be determined in consultation with both readers and must show intellectual integrity and academic coherence.

4. STS 190 PO - Senior Integrative Seminar

Requirements for the Major in STS/Public Policy Analysis (PPA)

This option is designed for students who wish to focus on public policy issues in science, technology and society. It is important to choose this option no later than the second semester of the sophomore year by contacting the program coordinators in both programs.

1. Five-course public policy sequence:
   a. ECON 051 PO, ECON 052 PO
   b. POLI 003 PO or PPA 001 PO, POLI 135 PO
c. One of the following science and public policy courses: POLI 136 PO, POLI 149 PO, POST 138 PZ or POST 184 PZ

2. Statistics: ECON 057 PO, POLI 090 PO, PSYC 158 PO or a course approved by the PPA program coordinator

3. Core courses in history and philosophy of science and technology:
   a. History of science and technology: two from STS 080 PO; STS 081 PZ or HIST 081 HM; HIST 082 HM
   b. Philosophy of science and technology: one from PHIL 007 PO, PHIL 103 PO or PHIL 104 PO

4. Four courses in mathematics (MATH 030 PO or above), science and/or engineering (including experimental and physiological psychology, excluding the statistics requirement above):
   a. One semester of a laboratory science
   b. Three courses in one field that count toward a major in that field or that are prerequisites to courses that count toward a major in that field

5. PPA 190 PO, PPA 191 PO, PPA 195 PO, three-course internship thesis sequence

• Science, Technology and Society Minor

Science, Technology and Society Minor

Requirements for a Minor in Science, Technology and Society

The STS minor is comprised of six courses; one each in history, philosophy and social studies of science and/or technology; the remaining three are STS-approved electives.

• Science, Technology and Society Courses

Science, Technology and Society Courses

Core Courses

Science, technology and society (STS) courses satisfy Area 2 of the Breadth of Study Requirements.

- ANTH111 HM - Introduction to the Anthropology of Science and Technology
- HIST082 HM - Science and Technology in the Modern World
- PHIL007 PO - Discovery, Invention and Progress
- PHIL103 PO - Philosophy of Science: Historical Survey
- PHIL104 PO - Philosophy of Science: Topical Survey
• POLI136 PO - Environmental Justice and Public Policy
• POLI149 PO - Science, Technology and Public Policy
• STS010 HM - Introduction to Science, Technology and Society
• STS080 PO - Science and Technology in the Ancient and Medieval Worlds
• STS081 PZ - Science and Technology in the Early Modern World
• STS 190 PO - Senior Integrative Seminar
• STS191 PO - Senior Thesis

STS Electives

See appropriate college catalogs for full descriptions.

History of Science and Technology

• ANTH153 PZ - History of Anthropological Theory
• ECON155 PZ - History of Economic Thought
• HIST016 PZ - Environmental History
• HIST110E PO - The Science of Empire
• HIST179F HM - U.S. Science & Technology Policy in the 20th & 21st Centuries/ Special Topics in History
• HIST179S HM - Special Topics in History
• HIST183 HM - Science and Technology in American Culture
• MATH108 PZ - History of Mathematics

Philosophy of Science and Technology

• MATH001 PZ - Mathematics, Philosophy and the Real World
• PHIL037 PO - Values and the Environment
• PHIL038 PO - Bioethics
• PHIL040 PO - Ancient Philosophy
• PHIL057 JT - Philosophy of Technology: Our Technologies, Ourselves
• PHIL062 PZ - Chance and Scientific Reasoning
• PHIL101 HM - History of Philosophy: Ancient Philosophy
• PHIL102 PO - Science and Values
• PHIL106 PO - Philosophy of Biology
• PHIL113 SC - Early Modern Philosophy: The Rationalists
• PHIL125 HM - Ethical Issues in Science and Engineering
• PHIL140 HM - Environmental Philosophy

Political, Cultural and Social Perspectives on Science and Technology

• ANTH110 HM - Life: Knowledge and Practices
• ANTH121 SC - Science, Medicine & Technology
• ASAM130 PZ - Science, Technology, Asian America
• BIOL069L KS - Discovery, Innovation and Risk
- BIOL159 KS - Natural Resource Management
- CSCI162 HM - Beyond Calculation Next 25 Years
- EA010 PO - Intro to Environmental Analysis
- ENVS010 PZ - Environment and Society
- ENVS104 PZ - Doing Natural History
- ENVS141 PZ - Progress and Oppression
- ENVS147 PZ - Community, Ecology and Design
- ENVS148 PZ - Ethnoecology
- ENVS162 PZ - Gender, Environment and Development
- HIST138 SC - Disease, Identity, and Society
- HIST179 HM - Special Topics in the History of Science
- HIST183 HM - Science and Technology in American Culture
- HMSC148 SC - The Poetry and Science of Sleep
- HIST150 HM - Technology and Medicine
- ID141 CM - Leadership and the Sciences
- IIS113 PZ - Science, Politics and Alternative Medicine
- LIT179 HM - Special Topics in Literature
- MATH010G PZ - Mathematics in Many Cultures
- MS179D HM - Species of Cinema
- MUS091 PO - Perception, Cognition, and the History of Sound
- PHYS017 PO - Physics in Society: A Critical Analysis of Energy Policies
- PHYS080 HM - Topics in Physics Nuclear Reactors
- POLI136 PO - Environmental Justice and Public Policy
- POLI135 PO - Policy Implementation and Evaluation
- POST176 PZ - Environmental Policy
- POST184 PZ - Science, Technology and Politics
- POST190 PZ - Science, Politics and Alternative Medicine
- PSYC176 PO - The Psychology of Health and Medicine
- PSYC190 PZ - History and Systems
- RLST179 HM - Special Topics in Religious Study
- RLST183 HM - Ghosts and the Machines: Occult Mediumship and Modern Media
- SOC055 PO - Population and Environment
- SOC122 PZ - Sociology of Health and Medicine
- SOSC147 HM - Enterprise and Entrepreneurs
- STS114 HM - Social and Political Issues in Clinic
- STS124S HM - U.S. Science and Technology Policy
- STS179 HM - Spec Topics: Sci, Tech, Society
- STS187 HM - HIV/AIDS: Science, Society and Service
- STS199DRPO - Science, Technology and Society: Directed Readings
- STS199IRPO - Science, Technology and Society: Independent Research

**Science and Engineering STS Electives**
- BIOL159 KS - Natural Resource Management
- CSCI162 HM - Beyond Calculation Next 25 Years
- ENGR201 HM - Economics of Technical Enterprise
- ENGR202 HM - Engineering Management
- GEOL111A PO - Introduction to GIS
- GEOL112 PO - Remote Sensing of Earth's Environment
- GEOL125 PO - Earth History with Lab
- PHYS017 PO - Physics in Society: A Critical Analysis of Energy Policies
- PHYS080 HM - Topics in Physics

Read more about our learning objectives:
www.pomona.edu/administration/academic-dean/learning-objectives

Return to: Departments, Programs and Areas of Study

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Concentration requirements

Requirements

Consisting of 12 courses, the program of study outlined below will be developed by each student in consultation with the concentration advisor. Where appropriate, independent reading, lab courses or GISPs may count for up to three of the twelve total courses. Students will take a minimum of 7 intermediate to advanced courses.

Required Courses (2)

The concentration has two required courses.

- **SCSO 1000**: Science and Society: Theories and Controversies, usually taken in the second or third year.
- **SCSO 1900**: Senior Seminar, also open to non-majors with the proper background, usually taken senior year.

Thematic Track (3)

Students will organize their course of study around the choice of a thematic track. The theme may be thought of as the applied content portion of the concentration. Students will take a minimum of three courses, at least one of which must be at an advanced level, in one of the thematic areas listed below:

- History & Philosophy of Science
- Gender & Science
- Race, Science, & Ethnicity
- Health & Medicine
- Representing Science in Literature & Culture
- Policy, Persuasion, & the Rhetoric of Science
- Environment & Society
- Independent Focus

Science Track (4)

Students will take a minimum of four courses in one of the following scientific areas: physical sciences, life sciences, mathematics/computer science. The chosen area should provide appropriate background and support for the chosen concentration theme. The science courses will be sequenced such that a concentrator will move enough beyond the introductory level to gain some understanding of the world view of scientists within a chosen field. The particular sequence of courses which best meets the science requirement will be chosen in consultation with the concentration advisor. When necessary, the concentration advisor will seek guidance from faculty within the chosen scientific field.

(Students who are double concentrating in Science and Society as well as a field in the natural sciences may, where appropriate, substitute two courses in the arts, humanities, or social sciences to fulfill the requirements of the science track.)

Science and Technology Studies Theory (3)

Students will take three Science and Technology Studies-related courses in the social sciences and humanities. These courses, which will provide critical theoretical background for the study of Science and Society, should address questions of historiography, epistemology and methodology in the field of science and technology studies.
The major in History of Science, Medicine, and Public Health (HSHM) requires twelve term courses, including the two-term senior requirement. Students select a pathway of seven courses that guides them through an area of specialization. The seven pathway courses must include two courses in HSHM; one seminar numbered 100 or above in HSHM or History; one science course; and three electives chosen from relevant courses in any department.

The five standard pathways in the major are: medicine and public health; global health; science, technology, and society; gender, reproduction, and the body; and media, knowledge, and visual cultures. Students may also design a custom pathway in consultation with the Director of Undergraduate Studies. No later than the beginning of the junior year, students in the major must select a standard pathway or indicate that they will design their own.

Beyond the seven pathway courses, students must complete three additional electives in HSHM. One of the electives must be a seminar, and one must be chosen from a pathway other than the one selected for the major. All courses for the major are chosen in collaboration with the student’s advisor.
Here is an example of a pathway in Science, Technology, and Society:

1) HSHM course: HSHM 226 The Scientific Revolution
2) HSHM course: HSHM 211 Catastrophe and the Earth Sciences since 1850
3) Seminar (HSHM or History): HSHM 411 Science: Newton to Neutrons
4) Elective (any department): EVST 120 Introduction to Environmental History
5) Elective (any department): ANTH 438 Culture, Power, Oil
6) Elective (any department): BENG 405 Biotech and the Developing World
7) Science elective: MCDB 370 Biotechnology

HSHM courses in this pathway:
courses numbered 400 and above are seminars

- HSHM 204 American Environmental History
- HSHM 206 Science & Technology in the U.S.
- HSHM 211 Global Catastrophe since 1750
- HSHM 212 Historical Perspectives on Global Health
- HSHM 214 Extraterrestrials in History
- HSHM 216 Minds and Brains in America
- HSHM 218 Science from Newton to Neutrons
- HSHM 226 The Scientific Revolution
- HSHM 227 Science in the Ancient and Premodern World
- HSHM 235 Epidemics and Society in the West since 1600
- HSHM 242 Molecules, Life, & Disease: 20th Century
- HSHM 405 Historical Perspectives on Gender and Technology
- HSHM 408 Science and Human Sciences
- HSHM 409 Minds & Brains from Phrenology to fMRI
- HSHM 410 The Science and Politics of Pollution
- HSHM 411 Science: Newton to Neutrons
- HSHM 412 History of the Laboratory
- HSHM 413 X-Ray Visions: Medical Imaging since 1895
- HSHM 414 Ancient Greek Medicine
- HSHM 415 Historical Perspectives on Science and Religion
- HSHM 420 History of Addiction
- HSHM 422 Cartography, Territory, and Identity
- HSHM 423 Biomedical Futures Since 1945
- HSHM 425 Gender in Science and Medicine
- HSHM 430 Mental Illness and Crime in American Culture
HSHM 434 Science and Religion in Spanish Narrative
HSHM 437 The Global Crisis of Malaria
HSHM 447 History of Chinese Science
HSHM 448 American Medicine and the Cold War
HSHM 455 History of the Body
HSHM 457 Other Minds
HSHM 458 Technology and Power
HSHM 459 Spies, Secrets, and Science
HSHM 469 Photography and the Sciences
STSC Requirements

Requirements of the STSC Major

The STSC Major requires fourteen (14) cu or fourteen separate courses to complete for graduation. Scroll down to the section "what counts for the STSC major" for further information.

I. Core Courses (2 cu)

Students must take STSC 001 OR STSC 003 and one of the following courses:
STSC 160
STSC 168
STSC 208
STSC 212

Students may also fulfill this requirement by taking STSC 001 and 003.

II. Department Courses (7 cu)

See the link "What counts as a Department Course" to see which courses fulfill this requirement.

III. Submajors (4 cu)

Each STSC major selects one of the following submajors and completes four (4) courses for it using pre-approved and petitioned courses. A submajor constitutes an individual intellectual agenda for each student (investigating a question or a problem or a topic). When students want to petition courses for the submajor, they should make a strong argument as to how the course supports this agenda.

- Biotechnology and Biomedicine
- Energy and Environment
- Global Science and Technology
- Information and Organizations
- Science/Nature/Culture

IV. Capstone Research Requirement (1 cu)

The Capstone requirement is satisfied by taking a 400-level course in STSC or HSOC, or designing and completing an independent study (STSC 499), during the last three semesters before graduation (after the middle of junior year).

Requirements for Majors before Jan. 4, 2017 (Majors who declared before 1/4/17 may choose to switch to the new structure of the STSC major or remain with the former structure.

I. Core Courses (2 cu)  STSC 001 and STSC 003
II. Department Courses (5 cu)
III. Submajors (6 cu)
- Cultures of Technoscience
- Energy, Environment and Technology
- Information
- Life Sciences and Society

IV. Capstone Research Requirement (1 cu)

What Counts for the STSC Major

Courses

- CORE COURSES: There are no substitutes for core courses (001, 003, 160, 168, 208, 212)
- DEPARTMENT COURSES: are only those courses that are listed on the Department Courses page. Courses from abroad cannot fulfill the department course requirement nor can non department courses be petitioned to fulfill this requirement. Caution: there are occasionally courses listed as STSC that do not count as department electives, so read the list on the page!
- SUBMAJOR COURSES: Pre-approved courses for the submajors count automatically and do not need to be petitioned.
- Petitions for submajor courses: are evaluated on the relevance of the course to the submajor and the quality of the argument for the course to be included in the submajor.
• **Submajor Courses from outside the College:** Students may have a maximum of **three** which go into the submajor. This includes transfer courses approved through XCat.

• **Study Abroad courses** (up to 2 cu) count if approved through XCat and only for the submajor, not to substitute for core courses or department electives (there are a very few exceptions to this rule.)

• There is no double-counting within the major or between sections of the major. The Capstone course is a separate requirement and cannot double count within the major.

• AP credits do not count toward the STSC major.

• Seniors may not petition courses after the add period in their last semester

### Grades

• The minimum grade for credit in the major is a C-

• Courses taken pass-fail cannot count toward the major (this is College policy)

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**Health & Societies Major (/undergraduate/health-and-societies-major)**

**Science, Technology & Society Major (/undergraduate/science-technology-and-society-major)**

**STSC Requirements (/undergraduate/stsc-major/science-technology-society-requirements)**

**STSC Core Courses (/undergraduate/stsc-major/science-technology-society-requirements-and-information/stsc-core-courses)**

• What counts as a "Department Course" for STSC (/undergraduate/stsc-major/science-technology-society-requirements-and-information/what-counts-stsc)

• Submajors in the STSC Major (/undergraduate/stsc-major/science-technology-society-requirements-and-information/submajors-within)

• What Counts for the Major (/undergraduate/stsc-major/science-technology-society-requirements-and-information/what-counts)

**Research in STSC (/undergraduate/science-technology-society-major/research-stsc)**

• What STSC Graduates Do: Alumni News (/undergraduate/stsc-major/alumni-news-stsc-and-hssc-undergrad)

• How to Become a STSC Major (/undergraduate/stsc-major/information-pre-majors-about-stsc)

• Study Abroad in STSC (/undergraduate/stsc-major/science-technology-society-requirements-and-information/what-counts-study)

**STSC Journal, _Momentum_ (/undergraduate/stsc-major/science-technology-society-requirements-and-information/stsc-journal)**

**STSC-related Opportunities (/undergraduate/science-technology-society-major/stsc-related-opportunities)**

**The STSC Minor (/undergraduate/stsc-major/stsc-minor)**

**Advising Hours Fall 2017 (/undergraduate/advising-hours-fall-2017)**

**WEEKLY BLAST: Events and Opportunities for Majors (/undergraduate/weekly-blast-events-and-opportunities-majors)**

**Course Information & Permits (/undergraduate/course-information)**

**For Prospective Students (/undergraduate/prospective-students)**

**7 Tips for Finding Academic Success at Penn (/undergraduate/7-tips-finding-academic-success-penn)**

**Life After Penn & Alumni News (/undergraduate/life-after-penn-alumni-news)**
# Courses for Fall 2017

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<td>HSOC 001-401 EMERGENCE OF MODERN SCI</td>
<td>MARTUCCI, JESSICA</td>
<td>CLAUDIA COHEN HALL 402</td>
<td>MW 1000AM-1100AM</td>
</tr>
<tr>
<td>HSOC 002-401 MEDICINE IN HISTORY</td>
<td>BARNES, DAVID</td>
<td>CLAUDIA COHEN HALL 402</td>
<td>TR 1030AM-1200PM</td>
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<tr>
<td>HSOC 042-301 Snip and Tuck: A History of Surgery</td>
<td>LINKER, BETH</td>
<td>CLAUDIA COHEN HALL 337</td>
<td>T 0330PM-0430PM</td>
</tr>
<tr>
<td>HSOC 059-301 Medical Missionaries and Partners</td>
<td>BREAM, KENT</td>
<td>HARNWELL COLLEGE HOUSE M10</td>
<td>W 0200PM-0300PM</td>
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<td>HSOC 100-401 INTRO SOCI RESEARCH</td>
<td>REAY, MICHAEL</td>
<td>FISHER-BENNETT HALL 401</td>
<td>MW 1100AM-1200PM</td>
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<tr>
<td>HSOC 111-401 HEALTH OF POPULATIONS</td>
<td>KOHLER, HANS-PETER</td>
<td>ANNENBERG SCHOOL 111</td>
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<tr>
<td>HSOC 135-401 THE POLITICS OF FOOD</td>
<td>SUMMERS, MARY</td>
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<td>HSOC 145-401 COMPARATIVE MEDICINE</td>
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<td>CLAUDIA COHEN HALL 402</td>
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<td>HSOC 150-401 AMERICAN HEALTH POLICY</td>
<td>JOHNSON, ANDRIA</td>
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<tr>
<td>HSOC 206-301 Humanitarianism and Global Health</td>
<td>MCKAY, RAMAH</td>
<td>CLAUDIA COHEN HALL 337</td>
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<tr>
<td>HSOC 212-401 SCIENCE TECHNOLOGY &amp; WAR</td>
<td>LINDEE, MARY</td>
<td>CLAUDIA COHEN HALL 402</td>
<td>MW 1100AM-1200PM</td>
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<tr>
<td>HSOC 216-401 GENDER AND HEALTH</td>
<td>LINKER, BETH</td>
<td>CLAUDIA COHEN HALL 337</td>
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<tr>
<td>HSOC 238-401 INTRO TO MED ANTHRO</td>
<td>BARG, FRANCES</td>
<td>UNIVERSITY MUSEUM B17</td>
<td>MW 0100PM-0200PM</td>
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<tr>
<td>HSOC 239-601 GLOBAL HLTH. ANTH PERSP</td>
<td>JOINER, MICHAEL</td>
<td>UNIVERSITY MUSEUM 345</td>
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<td>HSOC 241-301 STEM CELLS, SCI, &amp; SOC: Stemcells, Science, and Society</td>
<td>ZARET, KENNETH GEARHART, JOHN</td>
<td>WILLIAMS HALL 202</td>
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<tr>
<td>HSOC 271-401 GREEK &amp; ROMAN MEDICINE</td>
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<td>CLAUDIA COHEN HALL 237</td>
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<tr>
<td>HSOC 277-401 MENTAL ILLNESS</td>
<td>SCHNITTKER, JASON</td>
<td>COLLEGE HALL 200</td>
<td>MWF 1000AM-1100AM</td>
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<tr>
<td>HSOC 334-601 BIRTH CULTURE &amp; MED TECH</td>
<td>MACKENZIE, ELIZABETH</td>
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<tr>
<td>HSOC 379-401 ANIMALS IN SCI MED TECH</td>
<td>GREENE, ANN</td>
<td>CLAUDIA COHEN HALL 392</td>
<td>TR 1200PM-0130PM</td>
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<tr>
<td>HSOC 382-301 GUNS &amp; LOVE GONE BAD: Guns and Love Gone Bad: A Public Health Perspective</td>
<td>SORENSON, SUSAN</td>
<td>CLAUDIA COHEN HALL 392</td>
<td>MW 0230PM-0300PM</td>
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<tr>
<td>HSOC 421-301 MEDICINE AND DEVELOPMENT</td>
<td>MCKAY, RAMAH</td>
<td>MCNEIL BUILDING 167-8</td>
<td>R 0300PM-0430PM</td>
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<td>HSOC 430-301 DISEASE &amp; SOCIETY</td>
<td>JOHNSON, ANDRIA</td>
<td>CLAUDIA COHEN HALL 392</td>
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<td>HSOC 458-301  ENVIRONMENTS AND HEALTH</td>
<td>CRNIC, MEGHAN</td>
<td>CLAUDIA COHEN HALL 203</td>
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<td>HSSC 505-301  SEM IN H&amp;SS</td>
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<tr>
<td>HSSC 506-301  READINGS IN RACE &amp; SCIEN: Readings in Race and Science</td>
<td>GIL-RIANO, JUAN</td>
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<tr>
<td>HSSC 518-301  BOTANIC EMPIRE: Plants and Colonialism 1700 to 1950</td>
<td>MUKHARJI, PROJIT</td>
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<td>STSC 001-401  EMERGENCE OF MODERN SCI</td>
<td>MARTUCCI, JESSICA</td>
<td>CLAUDIA COHEN HALL 402</td>
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<td>STSC 002-401  MEDICINE IN HISTORY</td>
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<td>CLAUDIA COHEN HALL 402</td>
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<td>STSC 026-401  PHILOSOPHY OF SPACE AND TIME</td>
<td>DOMOTOR, ZOLTAN</td>
<td>STITELER HALL B26</td>
<td>MWF 1100AM-1200PM</td>
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<td>STSC 078-301  Everyday Technologies and the Making of the Modern World</td>
<td>PETRIE, IAN</td>
<td>CLAUDIA COHEN HALL 204</td>
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<td>STSC 123-301  DARWIN'S LEGACY</td>
<td>GIL-RIANO, JUAN</td>
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<td>STSC 168-001  ENVIRONMENT AND SOCIETY</td>
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<td>STSC 270-301  DIGITAL DEMOCRACY</td>
<td>DICK, STEPHANIE</td>
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<td>BERKOWITZ, CARIN</td>
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**Course Filter**

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Fall 2017

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All department subjects

Level
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All

**Helpful Links**

The Registrar’s Website ([http://www.upenn.edu/registrar/](http://www.upenn.edu/registrar/))
- HSOC Roster ([http://www.upenn.edu/registrar/timetable/hsoc.html](http://www.upenn.edu/registrar/timetable/hsoc.html)) for current term
- STSC Roster ([http://www.upenn.edu/registrar/timetable/stsc.html](http://www.upenn.edu/registrar/timetable/stsc.html)) for current term
- HSSC Roster ([http://www.upenn.edu/registrar/timetable/hssc.html](http://www.upenn.edu/registrar/timetable/hssc.html)) for current term

College of Liberal & Professional Studies ([http://www.sas.upenn.edu/lps/](http://www.sas.upenn.edu/lps/))


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## Courses for Spring 2018

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<td>BENSON, ETIENNE</td>
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<td>HSOC 010-001 HEALTH &amp; SOCIETIES</td>
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<td>HSOC 100-401 Introduction to Sociological Research</td>
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<td>HSOC 102-401 BIOETHICS</td>
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<td>HSOC 111-401 HEALTH OF POPULATIONS</td>
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<td>HSOC 112-001 THE PEOPLES HEALTH</td>
<td>BARNES, DAVID</td>
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<td>HSOC 202-401 SCIENTIFIC REVOLUTION</td>
<td>VOELKEL, JAMES</td>
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<td>HSOC 209-401 Race and Gender in Global Science</td>
<td>GIL-RIANO, JUAN</td>
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<td>HSOC 230-301 FUNDMTLS OF EPIDEMIOLOGY</td>
<td>PINTO-MARTIN, JENNIFER</td>
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<td>HSOC 251-301 FOUNDATION OF PUBLIC HEALTH Foundations of Public Health</td>
<td>SORENSON, SUSAN</td>
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<td>HSOC 259-601 INTR COMPLE &amp; ALTERN MED</td>
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<td>HSOC 260-301 SOC DETERMINANTS HLTH: Social Determinants of Health</td>
<td>JOHNSON, ANDRIA</td>
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<tr>
<td>HSOC 275-401 MEDICAL SOCIOLOGY</td>
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<td>HSOC 335-401 HEALTHY SCHOOLS</td>
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<td>HSOC 338-401 Hybrid Science: Nature, health, and society in Latin America</td>
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<td>HSOC 411-401 SPORT SCIENCE &amp; MEDICINE</td>
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<td>MW 0200PM-0330PM</td>
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Course Filter

Term
Spring 2018

Subject
All department subjects

Level
All

Permits & Permissions (/courses/permits-permissions)

Department Courses That Fulfill the General Requirement (/courses/department-courses-fulfill-general-requirement)

Capstone Courses (/courses/capstone-courses)

Helpful Links

The Registrar's Website (http://www.upenn.edu/registrar/)
- HSOC Roster (http://www.upenn.edu/registrar/timetable/hsoc.html) for current term
- STSC Roster (http://www.upenn.edu/registrar/timetable/stsc.html) for current term
- HSSC Roster (http://www.upenn.edu/registrar/timetable/hssc.html) for current term

College of Liberal & Professional Studies (http://www.sas.upenn.edu/lps/)


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Penn WebLogin (pennweblogin/login)
The Science & Society Certificate Program is an undergraduate, interdisciplinary course of study that integrates science with its relationship to society. The interdisciplinary curriculum enables students to understand the social, legal, historical, and policy issues stemming from research and technological advances in both basic and applied science.

The Certificate in Science & Society allows undergraduate students to build science and technology leadership training and hone their expertise in science and technology policy.

Through a series of 4 courses, 2 lab placements, and a senior capstone project, students will learn to:

- Critique and analyze science and its downstream applications.
- Understand the social implications as well as the power and the limits of science and technology.
- Understand how research works (and sometimes doesn’t).
- Analyze both quantitative and qualitative data.
- Develop policy options that are practical, ethical, and just.

How to Register

https://scienceandsociety.duke.edu/learn/undergraduate-education/
To begin enrolling in the certificate, complete the form below and someone will be in touch with you to guide you through the registration process:

Your Name (required)

Your Email (required)

Your school (Trinity, Pratt, etc.)

Your student ID

- If you are an undeclared Trinity student you may declare the S&S Certificate through the Academic Advising Center.
- If you are a declared Trinity sophomore or junior, you may enroll in the S&S Certificate here.
- If you are a Trinity senior, please email trinity.graduation@aas.duke.edu to request adding the S&S Certificate.
- If you are a Pratt student, please fill out this form to enroll. (Select the S&S Certificate in the drop/down menu and explain your request in the comments section.)

SEND

Curriculum Requirements

Students complete 5 courses and 2 research experiences (at least one of which is for credit):

- SCISOC 256/Genome 256 (core course) preferably taken by the end of the junior year.
Three elective courses (jump to current listings), including at least one course with an ethics, law, or policy component.

Two approved research experiences consisting of either two semester long independent study courses or one semester long independent study course plus one approved summer research experience. All Duke summer research programs count toward the certificate.

SCISOC 498S/Genome 498S capstone course to be taken in the spring of senior year.

Note: At least one elective and at least one research experience must have a science component, and at least one elective must have an ethics, social science, law, or policy component. No more than three courses may originate in any one department; only two courses may be used to satisfy the requirements for any major, minor, or other certificate; and at least half the courses must be taken at Duke.

Preparing for graduation

Please submit the Science & Society Certificate completion form at least 6 months before your graduation date.

Electives

The following courses will count as electives for the S&S Certificate. This is a list of past and current courses. Not all courses below are currently offered. Check in ACES for current course listings. If you took a course that is not listed here and wish for it to be considered as an elective for the Certificate, please send a detailed syllabus to Emilia Chiscop-Head, PhD, Assistant Manager for Education.

AAAS 261D  Race, Genomics & Society
AAAS 569  Sickle Cell Disease
AAAS 660  Health in African Diaspora
BIOETHIC 502  Communicating Science & Bioethics
BIOETHIC 591  Topics in Science Policy. Independent Study.
BIOLOGY 118FS  Emerging Diseases
BIOLOGY 128FS  Evolutionary Genomics: Who are we, where have we been, and where are we going?
BIOLOGY 148FS  Genomics of Host-Microbe Interactions: The Symbiotic Web
BIOLOGY 180FS  Emerging Diseases
BIOLOGY 219   Molecular Genetics & Genomics
BIOLOGY 251L  Molecular Evolution
BIOLOGY 255   Philosophy of Biology
BIOLOGY 311   Systems Biology: An Introduction for the Quantitative Sciences
BIOLOGY 350   Complex Traits and Evolutionary Genetics
BIOLOGY 420   Cancer Genetics
BIOLOGY 450S  Genomics of Adaptation: A Modern Look at Evolution
BIOLOGY 452S  Genes & Development
BIOLOGY 454   Physiological Genetics
BIOLOGY 554   Genomic Perspectives on Human Evolution
BME 195FS   Medical Instrumentation in the Developing World
BME 561L   Genome Science and Technology Lab (GE, MC)
CBB 520   Genome Tools and Technologies
CBB 561L   Genome Science and Technology Lab
CBB 662   Computational Systems Biology
COMPSCI 260  Introduction to Computational Genomics
COMPSCI 662  Computational Systems Biology

https://scienceandsociety.duke.edu/learn/undergraduate-education/
CULANTH 113FS Enterprising Leadership and Civic Engagement
CULANTH 190FS Technology, Culture and Scientific Initiatives: Approaches towards Social Change
CULANTH 190FS The Limits of Good Intentions: The Promises and Confines of Effective Humanitarianism
CULANTH 190FS.03 International Law & Global Health
CULANTH 660 Health in the African Diaspora

DOCST 202S Children and Illness
DOCST 206S Medicine and Documentary Photography
DOCST 209FS Digital photography; Education, Childhood and Growth

ECON 112FS Globalization and Corporate Citizenship
ECON 190FS An Introduction to Game Theory
ECON 334 Health Economics

EDUC 111FS Pursuit of Equality: Rethinking Schools-Lens of Social Justice
EDUC 112FS Medical Ethics, Aging, and End of Life Care in the US
EDUC 113FS Enterprising Leadership and Civic Engagement
EDUC 209FS Digital photography; Education, Childhood and Growth
EDUC 290S Medical Ethics, Aging, and End of Life Care in the US

EGR 121 Engineering Innovation
ENGLISH 190FS Shades of Gray: Coming of Age in the Era of Population Aging

ENGLISH 290 The Contemporary Novel
ENGLISH 355 Idealistic Nature
ENGLISH 490 Environment in Literature, Law, and Science

ENGLISH 490S.01 Special Topics in Language and Literature

EVANTH 128FS Evolutionary Genomics: Who are we, where have we been, and where are we going?

ETHICS Human Rights & World Politics
129FS
ETHICS
Globalization and Corporate Citizenship

160FS
ETHICS
Refugees, Rights and Resettlement

199FS
EVANTH
Human Rights & World Politics

EVANTH
Globalization and Corporate Citizenship

EVANTH
Refugees, Rights and Resettlement

EVANTH
Social Structures in an Evolutionary Framework

EVANTH 514 Genomic Perspectives on Human Evolution

FRENCH 337 French Scientists Write

GENOME 118FS
The Secrets of Life: DNA, Property Rights and Human Identity

GENOME 120FS
Ethical Implications of Genetic and Genomic Research

GENOME 122FS
Genetics and Epigenetics: The Codes that Control Our Genomes

GENOME 123FS
Ethics, Law, and Policy in Genomics

GENOME 128FS
Evolutionary Genomics: Who are we, where have we been, and where are we going?

GENOME 138FS
Synthetic Genomics: Science, Policy and Ethics

GENOME 148FS
Genomics of Host-Microbe Interactions: The Symbiotic Web

GENOME 159 The Past and Future of the Human Genome

GENOME 165 Introduction to the United States Health Care System

GENOME 190FS
Focus Program: Topics in Genome Sciences

GENOME 205 Science and Masculinity

GENOME Influential Scientists and Policy Leaders in Science Policy
238S
GENOME 248 Science and Policy of Obesity
GENOME 256 Genome Sciences and Society
GENOME 258 Race, Genomics, and Society
GENOME 268S Law & Genomic Sciences
GENOME 290S Special Topics in Genome Sciences
GENOME 293 Research Independent Study in Genome Sciences
GENOME 293-1 Research Independent Study in Genome Policy
GENOME 294 Research Independent Study in Genome Sciences
GENOME 294-1 Research Independent Study in Genome Policy
GENOME 337 French Scientists Write
GENOME 341 Ethics of Infectious Disease Control
GENOME 369 History of Public Health in America
GENOME 371 Feast and Famine: Food in Global History
GENOME 380 The Scientific Revolution
GENOME 417S Genetic Engineering and Biotechnology
GENOME 439S Neuroscience and Multilingualism
GENOME 475S Variation in the African Diaspora
GENOME 498S Genome Sciences and Policy Capstone
GENOME 502S Communicating Science & Bioethics
GENOME 508S Genetics for Global Health
GENOME 584 Genetics and Reproductive Technologies
GENOME 590S Special Topics in Genome Sciences

https://scienceandsociety.duke.edu/learn/undergraduate-education/
GENOME 612 Ethics and Policy in Genomics

GENOME 627 Molecular Ecology

GENOME 641 Cancer in Our Lives: Film, Narrative, Fiction, History and Politics

GENOME 750 Genomics of Microbial Diversity

GLHLTH 188FS Singing the Same Song: A global perspective on patient-provider communication

GLHLTH 189FS “To Boldly Go!” Global Health and the Ethics of Engagement

GLHLTH 190FS International Law & Global Health

GLHLTH 210FS Global Health Ethics as Value Conflicts

GLHLTH 261FS The Psychology of Health Behavior Change (A,C,S)

GLHLTH 302FS Global Narratives of HIV/AIDS

HISTORY 127FS Globalization and Corporate Citizenship

HISTORY 260FS Magic/Religion/Science Since 1400

HISTORY 303FS The Rise of Modern Science: Newton to Einstein

HISTORY 577FS Historical and Philosophical Perspectives on Science

ICS 128FS Human Rights & World Politics

ICS 190FS International Law & Global Health

ICS 295FS Global Narratives of Living with HIV/AIDS

ISIS 670 Frontiers of Science and Methodology: Body Works: Medicine, Technology, and the Body in Early Twenty-First Century America

LAW 592FS Frontier AI & Robotics: Law & Ethics

LINGUIST 190FS Cognition, Identity and Linguistic Human Rights

LINGUIST 212FS Law, Ethics and Responsibility

LINGUIST 216FS Neuroscience and Human Language

LIT 521S Historical and Philosophical Perspectives on Science

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<td>LIT 623</td>
<td>Body Works: Medicine, Technology, and the Body in Early Twenty-First Century America</td>
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<td>MATH 161FS</td>
<td>Mathematics: Introduction to Mathematical Modeling in Biology</td>
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<td>MATH 165FS</td>
<td>Cryptography and Society</td>
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<td>MATH 168S</td>
<td>Mathematical Investigations in Genetics and Genomics</td>
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<td>NEUROSCI 116FS</td>
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<td>NEUROSCI 153FS</td>
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<td>NEUROSCI 267</td>
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<td>NEUROSCI 360</td>
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<td>NURSING 563</td>
<td>Trends in Genetics &amp; Genomics</td>
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<td>PHARM 370S</td>
<td>Pharmacogenomics</td>
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<td>PHIL 101</td>
<td>Introduction to Philosophy</td>
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<td>PHIL 218</td>
<td>Philosophical Issues in Medical Ethics</td>
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<td>PHIL 314</td>
<td>Philosophy of Biology</td>
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<td>PHIL 380</td>
<td>The Scientific Revolution</td>
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<td>PHIL 541S</td>
<td>Historical and Philosophical Perspectives on Science</td>
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<td>PHIL 570</td>
<td>Body Works: Medicine, Technology, and the Body in Early Twenty-First Century America</td>
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<td>POLSCI 176FS</td>
<td>Human Rights &amp; World Politics</td>
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<td>PSY 190FS</td>
<td>Addiction: Brain, Individual, and Society</td>
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<td>PSY 681S</td>
<td>Genetics and Environment in Abnormal Behavior</td>
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<td>PUBPOL 185FS</td>
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<td>PUBPOL 187FS</td>
<td>Globalization and Corporate Citizenship</td>
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<td>PUBPOL</td>
<td>Migrants, Managers and Multiple Citizens in a Global World</td>
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<td>PUBPOL 190FS.01</td>
<td>Law, Ethics and Responsibility</td>
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<td>PUBPOL 250FS</td>
<td>Intellectual Property &amp; Innovation: Law, Policy &amp; Entrepreneurship</td>
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<td>PUBPOL 373</td>
<td>PUBPOL 590 Applied Big Data Science</td>
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<td>Social Determinants of Health Disparities</td>
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<td>ROMST 19FS</td>
<td>Cognition, Identity and Linguistic Human Rights</td>
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<td>SCIISC 195FS</td>
<td>Medical Instrumentation in the Developing World</td>
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<td>SOC 178FS</td>
<td>Refugees, Rights and Resettlement</td>
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<td>STA 110FS</td>
<td>An Introduction to Statistical Modeling</td>
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<td>STA 112FS</td>
<td>Better Living through Data Science: Exploring, Modeling, Predicting, Understanding</td>
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<td>UPGEN 786</td>
<td>Complex Traits and Evolutionary Genetics</td>
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<tr>
<td>VMS 212FS</td>
<td>Digital photography; Education, Childhood and Growth</td>
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<td>WOMENST 278</td>
<td>Sex/ Gender Nature/Nurture</td>
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<td>WOMENST 290</td>
<td>Science, Law, and Literature</td>
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<td>WOMENST 290.03</td>
<td>Sexuality and the Law. Comparative Investigations</td>
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### Previously Offered Electives

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<td>Bioethic 502</td>
<td>Communicating Science &amp; Bioethics</td>
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<td>Biology 210FS</td>
<td>Genomes, Biology, Medicine</td>
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<td>BME 562</td>
<td>Biology By Design</td>
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<td>English 190FS-2 - 01</td>
<td>Literature, Genetics &amp; Freedom</td>
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<td>Genome 108FS/PUBPOL 183FS</td>
<td>Genome and the Internet: Growing Up Together</td>
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<td>Genome 156</td>
<td>Genetics, Genomics, and Society: Implications</td>
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for the 21st Century

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<td>Ethics of Biotechnology</td>
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<td>Phil 385</td>
<td>Science, Ethics, and Society</td>
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<td>Phil 590</td>
<td>Ethics of Biotechnology Policy</td>
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<td>PubPol 184FS</td>
<td>Synthetic Genomics</td>
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<td>PubPol 190FS.05/HISTORY</td>
<td>A Social and Political History of Genomics</td>
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<td>PubPol 233S</td>
<td>Scientists and Public Policy</td>
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<td>PubPol 381S</td>
<td>Science &amp; the Media</td>
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<td>PubPol 634/CBB 612</td>
<td>Ethics &amp; Policy in Genomics</td>
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<td>PubPol 641S/GENOME</td>
<td>Cancer in Our Lives: Film, Narrative, Fiction, History, &amp; Politics</td>
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<td>641S</td>
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<td>PubPol 590S-02 / GENOME 590S-06</td>
<td>Cancer and the Genome</td>
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Science, Technology, and Society

The Program in Science, Technology, and Society (STS) focuses on the ways in which scientific, technological, and social factors interact to shape modern life. The program brings together humanists, social scientists, engineers, and natural scientists, all committed to transcending the boundaries of their disciplines in a joint search for new insights and new ways of reaching science and engineering students. The goal of the program is to set up a forum to explore the relationship between what scientists and engineers do and the constraints, needs, and responses of society.

Located in a major university where most people study science and engineering, STS is dedicated to understanding the context of science and engineering.

STS as a Second Major

Joint Degree Programs

Minor in Science, Technology, and Society

Undergraduate Study

MIT students are increasingly seeking to understand the social and historical contexts in which they will work and the social consequences of what they will do in their professional careers. STS subjects help them think realistically and creatively about the intellectual, moral, political, and social issues raised by the rapid growth of science and technology in the 20th century and beyond.

STS contributes to undergraduate education at MIT in several ways. It offers general subjects to introduce students to broad social and intellectual perspectives on science and engineering fields. It also offers more specialized subjects in the history of science and technology and in social and cultural studies of science and technology. Within each of these categories, students can choose both introductory and more advanced subjects.

STS as a Second Major

Students who wish to integrate their professional study of engineering or science with a rigorous treatment of its relation to social and historical forces may pursue **STS as a second major** in cooperation with the Schools of Engineering and Science. The object of this program is to give those students the full technical and scientific education provided by a science or engineering major, balanced with intensive study of the historical and social contexts of science and technology. Double major applications from students in other Schools (e.g., Architecture and Planning; Management; Humanities, Arts, and Social Sciences) will be considered on a case-by-case basis.

Students in the double major program must complete all the requirements of both majors. The STS requirements include 14 subjects as follows:

- **STS.004 Intersections: Science, Technology, and the World**
- At least one **STS Tier I subject**, in addition to STS.004
- At least one **STS Tier II subject**
- Five other STS subjects
- Four subjects related to the historical and social study of science and technology
- **STS.THT Undergraduate Thesis Tutorial**
- **STS.THU Undergraduate Thesis**

If a student’s other major also requires a thesis, students may coordinate their thesis effort, pending approval of undergraduate officers in both majors. Further details on the requirements of the STS program may be obtained from the STS undergraduate academic officer and the STS academic administrator.

http://catalog.mit.edu/schools/humanities-arts-social-sciences/science-technology-society/#undergraduate
Joint Degree Programs

Students who wish to integrate studies in STS and science or engineering in the context of a single degree should consider this program. It leads to one degree, either a Bachelor of Science in Humanities and Science or a Bachelor of Science in Humanities and Engineering. The STS requirement for either degree is 10 subjects as follows:

- STS.004 Intersections: Science, Technology, and the World
- At least one STS Tier I subject, in addition to STS.004
- At least one STS Tier II subject
- Five other STS subjects
- STS.THT Undergraduate Thesis Tutorial
- STS.THU Undergraduate Thesis

Consult the 21E and 21S degree charts for details on the requirements for these joint degrees. Further details may be obtained from the SHASS Dean's Office, Room 4-240, and the STS academic administrator.

Minor in Science, Technology, and Society

The goal of the minor program is to give students a broad social perspective on the fields of engineering and science: how they have evolved and how they fit into the wider context of society, culture, politics, and values.

The Minor in Science, Technology, and Society consists of six STS subjects, including STS.004, at least one additional subject from the Tier I list, and at least one subject from the Tier II list.

<table>
<thead>
<tr>
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<tr>
<td>STS.001</td>
<td>Technology in American History</td>
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<tr>
<td>STS.002</td>
<td>Finance and Society</td>
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<td>The Rise of Modern Science</td>
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<tr>
<td>STS.006[J]</td>
<td>Bioethics</td>
</tr>
<tr>
<td>STS.007</td>
<td>Technology in History</td>
</tr>
<tr>
<td>STS.008</td>
<td>Technology and Experience</td>
</tr>
<tr>
<td>STS.009</td>
<td>Evolution and Society</td>
</tr>
<tr>
<td>STS.011</td>
<td>Engineering Life: Biotechnology and Society</td>
</tr>
<tr>
<td>STS.012</td>
<td>Science in Action: Technologies and Controversies in Everyday Life</td>
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<table>
<thead>
<tr>
<th>Tier II</th>
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<tbody>
<tr>
<td>Select one subject from the list of Tier II subjects</td>
<td>9-12</td>
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<tr>
<td>Electives</td>
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<tr>
<td>Select three additional subjects from among Tiers I and II</td>
<td>27-36</td>
</tr>
<tr>
<td>Total Units</td>
<td>60-72</td>
</tr>
</tbody>
</table>

*See list of Tier II subjects.*

Graduate Study

In collaboration, STS, the History Faculty, and the Anthropology Program offer a doctoral program in History, Anthropology, and Science, Technology and Society (HASTS).
The objective of the program is to develop advanced competence in the study of science and technology from a historical and social scientific perspective. Students are expected to develop professional mastery of a field of history or one of the social sciences. They must also master the underlying concepts in science and engineering that relate to their special field of interest.

Graduate students are required to take at least 10 subjects and usually complete them within their first two years. Normally, all students take the following required introductory seminars in their first year:

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Subject Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>21A.859[J]</td>
<td>Social Theory and Analysis</td>
<td>12</td>
</tr>
<tr>
<td>21H.991</td>
<td>Theories and Methods in the Study of History</td>
<td>12</td>
</tr>
<tr>
<td>STS.260</td>
<td>Introduction to Science, Technology, and Society</td>
<td>12</td>
</tr>
</tbody>
</table>

Students are encouraged to take 21A.809 Designing Empirical Research in the Social Sciences or 21A.819 Qualitative Research Methods at some point in their program. To fulfill the remaining subject requirement, students choose from among several departmental seminars designed to offer more in-depth study of particular topics. They may also take subjects offered by other MIT departments and through cross-registration with Harvard.

Upon the satisfactory completion of general examinations in the third year, students proceed to the writing of a dissertation proposal and dissertation, usually with the assistance of a multidisciplinary advisory committee.

Students from any academic discipline are invited to apply to the doctoral program.

For additional information about the graduate program, visit the HASTS website, or contact the STS academic administrator, Room E51-163, 617-253-9759.

**Inquiries**

Additional information on the Program in Science, Technology, and Society may be obtained from the STS academic administrator, Room E51-163, 617-253-9759.

**Faculty and Teaching Staff**

Jennifer S. Light, PhD  
Professor of Science, Technology, and Society  
Professor of Urban Studies and Planning  
Head, Science, Technology, and Society Program

**Professors**

Michael M. J. Fischer, PhD  
Andrew W. Mellon Professor in the Humanities  
Professor of Science and Technology Studies  
Professor of Anthropology

Deborah K. Fitzgerald, PhD  
Leverett Howell Cutten '07 and William King Cutten '39 Professor of the History of Technology

David I. Kaiser, PhD  
Germeshausen Professor of the History of Science  
Professor of Physics  
(On leave)

Kenneth R. Manning, PhD  
Thomas Meloy Professor of Rhetoric  
Professor of Science, Technology, and Society

David A. Mindell, PhD  
Frances and David Dibner Professor in the History of Engineering and Manufacturing
Professor of Aeronautics and Astronautics  
(On leave)

Merritt Roe Smith, PhD  
Leverett Howell Cutten ’07 and William King Cutten ’39 Professor of the History of Technology  
Professor of History

Sherry R. Turkle, PhD  
Abby Rockefeller Mauzé Professor of the Social Studies of Science and Technology

Rosalind H. Williams, PhD  
Bern Dibner Professor in the History of Science and Technology  
Professor of Comparative Media Studies/Writing

**Associate Professors**

Clapperton Chakanetsa Mavhunga, PhD  
Associate Professor of Science, Technology, and Society

Hanna Rose Shell, PhD  
Associate Professor of Science, Technology, and Society

**Assistant Professors**

Dwaipayan Banerjee, PhD  
Assistant Professor of Science, Technology, and Society

William Deringer, PhD  
Assistant Professor of Science, Technology, and Society  
(On leave)

Robin Scheffler, PhD  
Assistant Professor of Science, Technology, and Society  
(On leave, fall)

**Adjunct Professors**

John R. Durant, PhD  
Adjunct Professor of Science, Technology, and Society

**Professors Emeriti**

Louis L. Bucciarelli Jr, PhD  
Professor Emeritus of Engineering and Technology Studies

Leo Marx, PhD  
William R. Kenan Professor Emeritus  
Professor Emeritus of American Cultural History

Theodore A. Postol, PhD  
Professor Emeritus of Science, Technology, and National Security Policy

Eugene B. Skolnikoff, PhD  
Professor Emeritus of Political Science  
Professor Emeritus of Science, Technology, and Society

Leon Trilling, PhD  
Professor Emeritus of Aeronautics and Astronautics  
Professor Emeritus of Science, Technology, and Society
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<th>Course Title</th>
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<tr>
<td>STS.001</td>
<td>Technology in American History</td>
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<tr>
<td>STS.002</td>
<td>Finance and Society</td>
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<td>STS.002</td>
<td>Toward the Scientific Revolution</td>
<td>Undergraduate</td>
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<td>STS.003</td>
<td>The Rise of Modern Science</td>
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<td>STS.004</td>
<td>Science, Technology, &amp; World</td>
<td>Undergraduate</td>
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<td>STS.005</td>
<td>Disease and Society in America</td>
<td>Undergraduate</td>
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<td>STS.006J</td>
<td>Bioethics</td>
<td>Undergraduate</td>
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<td>STS.007</td>
<td>Technology in History</td>
<td>Undergraduate</td>
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<td>STS.009</td>
<td>Evolution and Society</td>
<td>Undergraduate</td>
</tr>
<tr>
<td>STS.010</td>
<td>Neuroscience and Society</td>
<td>Undergraduate</td>
</tr>
<tr>
<td>STS.011</td>
<td>American Science: Ethical Conflicts and Political Choices</td>
<td>Undergraduate</td>
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<tr>
<td>STS.014</td>
<td>Principles and Practice of Science Communication</td>
<td>Undergraduate</td>
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<tr>
<td>STS.025J</td>
<td>Making the Modern World: The Industrial Revolution in Global Perspective</td>
<td>Undergraduate</td>
</tr>
<tr>
<td>STS.027</td>
<td>The Civil War and the Emergence of Modern America, 1861-1890 (Spring 2015)</td>
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<tr>
<td>STS.029J</td>
<td>The Civil War and Reconstruction</td>
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<tr>
<td>STS.034</td>
<td>Science Communication: A Practical Guide</td>
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<td>STS.035</td>
<td>The History of Computing</td>
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<td>STS.036</td>
<td>Technology and Nature in American History</td>
<td>Undergraduate</td>
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<td>STS.038</td>
<td>Energy and Environment in American History: 1705-2005</td>
<td>Undergraduate</td>
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<td>STS.042J</td>
<td>Einstein, Oppenheimer, Feynman: Physics in the 20th Century</td>
<td>Undergraduate</td>
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<td>STS.049J</td>
<td>Technology and Gender in American History</td>
<td>Undergraduate</td>
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<td>STS.050</td>
<td>The History of MIT (Spring 2016)</td>
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<td>STS.050</td>
<td>The History of MIT (Spring 2011)</td>
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<tr>
<td>STS.060J</td>
<td>Anthropology of Biology</td>
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<td>STS.062J</td>
<td>Drugs, Politics, and Culture</td>
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<td>STS.064J</td>
<td>DV Lab: Documenting Science Through Video and New Media</td>
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<td>STS.065J</td>
<td>The Anthropology of Sound</td>
<td>Undergraduate</td>
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<td>STS.067</td>
<td>Scientific Visualization across Disciplines: A Critical Introduction</td>
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<td>STS.069</td>
<td>Technology in a Dangerous World</td>
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<td>STS.071J</td>
<td>Cross-Cultural Investigations: Technology and Development (Fall 2012)</td>
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<tr>
<td>STS.074J</td>
<td>Art, Craft, Science</td>
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<td>STS.075J</td>
<td>Technology and Culture</td>
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<td>STS.080</td>
<td>Youth Political Participation</td>
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<td>STS.085</td>
<td>Ethics and the Law on the Electronic Frontier</td>
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<td>STS.086J</td>
<td>Cultures of Computing</td>
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<td>STS.089</td>
<td>Technology and Innovation in Africa</td>
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<tr>
<td>STS.528</td>
<td>Godzilla and the Bullet Train: Technology and Culture in Modern Japan</td>
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<td>STS.250J</td>
<td>Social Theory and Analysis</td>
<td>Graduate</td>
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<td>STS.310</td>
<td>History of Science</td>
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<td>STS.320</td>
<td>Environmental Conflict and Social Change</td>
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<tr>
<td>STS.330</td>
<td>History and Anthropology of Medicine and Biology</td>
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<td>STS.340J</td>
<td>Introduction to the History of Technology</td>
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<tr>
<td>STS.350</td>
<td>Social Study of Science and Technology</td>
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<td>STS.360</td>
<td>Ethnography</td>
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<td>STS.410J</td>
<td>Readings in American History Since 1877</td>
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<td>STS.415J</td>
<td>Nature, Environment, and Empire</td>
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<tr>
<td>STS.420J</td>
<td>The Structure of Engineering Revolutions</td>
<td>Graduate</td>
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<td>STS.427</td>
<td>The Civil War and the Emergence of Modern America, 1861-1890 (Spring 2015)</td>
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<td>STS.428</td>
<td>Technology and Change in Rural America</td>
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<td>STS.429</td>
<td>Food and Power in the Twentieth Century</td>
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<td>Course #</td>
<td>Course Title</td>
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<td>STS.445J</td>
<td>Technologies for Creative Learning</td>
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<td>STS.449J</td>
<td>Introduction to Global Medicine: Bioscience, Technologies, Disparities, Strategies</td>
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<td>STS.449J</td>
<td>Social Studies of Bioscience and Biotech</td>
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<td>STS.460</td>
<td>Histories of Information, Communication, and Computing Technologies</td>
<td>Graduate</td>
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<tr>
<td>STS.461J</td>
<td>Integrating Doctoral Seminar on Emerging Technologies</td>
<td>Graduate</td>
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<tr>
<td>STS.462</td>
<td>Social and Political Implications of Technology</td>
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<td>STS.464</td>
<td>Technology and the Literary Imagination</td>
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<td>STS.464</td>
<td>Cultural History of Technology</td>
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<td>STS.467</td>
<td>Research Seminar in Deep Sea Archaeology</td>
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<tr>
<td>STS.471J</td>
<td>Engineering Apollo: The Moon Project as a Complex System</td>
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<td>STS.481J</td>
<td>Cross-Cultural Investigations: Technology and Development (Fall 2012)</td>
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<td>STS.484J</td>
<td>The Anthropology of Cybercultures</td>
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<td>STS.487J</td>
<td>System Optimization and Analysis for Manufacturing</td>
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<td>STS.489J</td>
<td>Data, Models, and Decisions</td>
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<td>STS.495J</td>
<td>Communicating With Data</td>
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<td>STS.496J</td>
<td>System Optimization and Analysis for Manufacturing</td>
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<tr>
<td>STS.497J</td>
<td>Competitive Decision-Making and Negotiation</td>
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<tr>
<td>STS.499J</td>
<td>Advanced Stochastic Processes</td>
<td>Graduate</td>
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**Sloan School of Management**

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<tbody>
<tr>
<td>15.031J</td>
<td>Energy Decisions, Markets, and Policies</td>
<td>Undergraduate</td>
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<tr>
<td>15.053</td>
<td>Optimization Methods in Management Science</td>
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<tr>
<td>15.075J</td>
<td>Statistical Thinking and Data Analysis</td>
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<td>15.279</td>
<td>Management Communication for Undergraduates</td>
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<td>15.301</td>
<td>Managerial Psychology (Fall 2006)</td>
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<td>15.301</td>
<td>Managerial Psychology Laboratory (Fall 2004)</td>
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<td>15.301</td>
<td>Managerial Psychology Laboratory (Spring 2003)</td>
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<tr>
<td>15.501</td>
<td>Introduction to Financial and Managerial Accounting (Spring 2004)</td>
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<tr>
<td>15.565J</td>
<td>Integrating eSystems &amp; Global Information Systems (Spring 2002)</td>
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<td>15.568A</td>
<td>Practical Information Technology Management</td>
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<td>15.615</td>
<td>Law for the Entrepreneur and Manager (Spring 2003)</td>
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<td>15.628J</td>
<td>Patents, Copyrights, and the Law of Intellectual Property</td>
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<td>15.647</td>
<td>Law for the Entrepreneur and Manager (Spring 2003)</td>
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<td>15.668</td>
<td>People and Organizations</td>
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<tr>
<td>15.772J</td>
<td>D-Lab: Supply Chains</td>
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<td>Supplemental</td>
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<td>15.010</td>
<td>Economic Analysis for Business Decisions (Fall 2004)</td>
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<td>15.011</td>
<td>Economic Analysis for Business Decisions (Fall 2004)</td>
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<tr>
<td>15.012</td>
<td>Applied Macro- and International Economics</td>
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<td>15.014</td>
<td>Applied Macro- and International Economics II</td>
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<td>15.015</td>
<td>Macro and International Economics</td>
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<tr>
<td>15.020</td>
<td>Competition in Telecommunications</td>
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<td>15.021J</td>
<td>Real Estate Economics</td>
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<tr>
<td>15.023J</td>
<td>Global Climate Change: Economics, Science, and Policy</td>
<td>Graduate</td>
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<td>15.024</td>
<td>Applied Economics for Managers</td>
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<td>15.025</td>
<td>Game Theory for Strategic Advantage</td>
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<td>15.032J</td>
<td>Engineering, Economics and Regulation of the Electric Power Sector</td>
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<td>15.040</td>
<td>Game Theory for Managers</td>
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<td>15.057</td>
<td>Systems Optimization</td>
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<td>15.060</td>
<td>Data, Models, and Decisions</td>
<td>Graduate</td>
</tr>
<tr>
<td>15.062</td>
<td>Data Mining</td>
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<td>15.063</td>
<td>Communicating With Data</td>
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<td>15.066J</td>
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<td>15.067</td>
<td>Competitive Decision-Making and Negotiation</td>
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</tr>
<tr>
<td>15.070J</td>
<td>Advanced Stochastic Processes</td>
<td>Graduate</td>
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</tbody>
</table>

[https://ocw.mit.edu/courses/#science-technology-and-society](https://ocw.mit.edu/courses/#science-technology-and-society)
BS in Science, Technology and Society

Students enroll in the Bachelor of Science in Science, Technology, and Society (STS) because they are interested in discovering how the work and communication strategies of scientists, technologists, and other professionals affect the social systems in which we partake.

STS majors begin their studies by exploring the theoretical and historical foundations of science and technology as they concern politics, social structure, economics, and culture. During the second and third years, core courses present case studies and practical assignments that build on the fundamentals learned in the first year. Students also select from one of five areas of specialization (see below) and identify a topic for their senior projects. STS majors are continuously developing their abilities to analyze complex information, solve critical problems, and demonstrate their ethical awareness and sense of public responsibility.

STS graduates pursue advanced degrees in medicine, law, business, and other fields. Others move into careers in, for example, environmental management, marketing, and science communication. Still others take positions with government, public policy organizations, or academia.

The Degree and Specializations

The STS major consists of four components: primary core courses (12 credits), STS specialization courses (12 credits), STS elective courses (6 credits), and senior thesis (6 credits). The program is designed for both single and double majors. Primary core courses introduce students to the fundamental connections between civilization, technology, and the global environment through a focus on historical and cultural foundations, basic ideas and values, and dominant institutions. STS specialization courses allow students to concentrate in one of five areas. Working closely with a faculty advisor, each student selects coursework comprising a coherent program designed to fulfill personal interests and potential career goals.

The five specializations are:

http://humanities.njit.edu/academics/undergraduate/sts/
• Mind, Behavior, and Society
• Environmental and Sustainability Studies
• Race and Gender in Science and Technology
• Politics, History, and Ethics in Science and Technology
• Music, Literature, and Culture in Technological Society

STS elective courses provide students with a broader view of the field and facilitate development of complementary understanding of topical issues.

The senior thesis marks the culmination of the STS curriculum. In this two-semester sequence, a topic that is of critical importance to each student’s undergraduate program and professional future are investigated in depth. Students work closely with the program director and a faculty advisor to identify a topic, research it thoroughly, and formulate a senior thesis for public presentation.

**Specializations and Courses**

**Mind, Behavior, and Society**
General Psychology (STS 210)
Minds and Machines (STS 351)
Philosophy and Psychology of Race and Gender (STS 339)
Philosophy of Science (PHIL 355)
Moral Psychology (STS 358)
Cyberpsychology (STS 359)

**Environmental and Sustainability Studies**
Environment, Technology, and Society (EPS 202)
Ethics and the Environment (STS 360)
Environmental Economics (STS 362)
Introduction to Sustainability Studies (STS 363)
Sustainability Policy and Practice (STS 364)

**Race and Gender in Science and Technology**
Sociology (STS 221)
Multiculturalism in a Technological Society (STS 340)
Women in Technological Culture (STS 342)
Philosophy and Psychology of Race and Gender (STS 339)
Politics, History, and Ethics in Science and Technology

Environment, Technology, and Society (EPS 202)
Technology and Policy (STS 312)
Women in Technological Culture (STS 342)
Philosophy of Science (PHIL 355)

Music, Literature, and Culture in Technological Society

Introduction to Music (STS 347)
Esthetics and Modern Technology (STS 348)
Advanced Music Technology (STS 349)
Science Fiction (LIT 386)

Science, Technology, and Society @ NJIT

The STS major at NJIT is enriched by a number of special features and opportunities, including access to an electronic music studio that supports classes in music and technology.

Opportunities exist for internships, which enable students to develop and apply their knowledge and skills in corporate and government settings. STS students who are members of the Albert Dorman Honors College (ADHC) may participate in accelerated and other pre-professional programs allied with the Seton Hall University Law School and various programs in the biomedical and health sciences at Rutgers University.

Students in the College of Science and Liberal Arts and elsewhere within NJIT are encouraged to consider a double major (or minor) in STS. During their senior year, double majors prepare a senior thesis that places work done for their primary major in an STS context.

Contributing Faculty Members

Maurie Cohen (Sustainable consumption, socio-technical transitions, mobility futures)

Daniel Estrada (Technology and human values, topics and issues in STS)
Requirement Details

Core Course

Science, Technology, Medicine, and Society (Residential College Social Science 275/History 285)

Offered each academic year. Introduces students to major STS theories, methods, concepts, and approaches and to the kinds of issues covered by the minor. STS minors should take the core course no later than their junior year.

Declaration and Advising

Students must meet with the faculty advisor to the STS minor to plan their program of study.

Please use our LSA online advising system to schedule an appointment with our STS Undergraduate Director (currently Prof. Perrin Selcer, History) from September through April. You can download the minor worksheet from here.

Electives

In addition to the core course, students must take a minimum of 4 electives (including minicourses), chosen from the approved list of STS courses.

- One course must be at the 300 level or above
- Only one course may be at the 100 level

Focus Track

Students must choose one of three focus tracks:

- Science and Society (S)
- Technology and Society (T)
- Medicine and Society (M)

At least two of the student's electives must be drawn from a single focus track (This means at least three courses, including the core course, which counts in all focus tracks, will be drawn from the student's focus track.) The list of approved courses shows which classes count for each track. In addition, students are strongly encouraged to take at least one upper-level course in a science, engineering, or medical discipline.

Overlap with Concentrations and Other Minors

At most one course may be shared between a major and a minor and be used to satisfy requirements of both. No course may be counted simultaneously toward both STS and any other minor. See important information about minors on the LSA academic minors page.

Note: At least ten credits must be taken in residence at the University of Michigan, Ann Arbor, or must count as in-residence credit (i.e., through UM-sponsored CGIS programs abroad).

For further information, you may also contact the STS Program advisor by email: sts.minor.advisor@umich.edu
Approved Courses

STS Core Course

History 285 / RCSC1275 — Science, Technology, Medicine and Society  S,T,M
Will be offered next in Winter 2018; Instructor: Professor Perrin Selcer.

Click through in the departments and programs below to get details on highlighted courses for the upcoming semester. Lists are updated in each fall and spring, as the course guide data becomes available.

- African and African American Studies
  DAAS 322 — Intro to Environmental Politics  S,T
  DAAS 328 — Women, Agency, and Safe Sex  S,M
  DAAS 355 — Health and Illness in African Worlds  M
  DAAS 358 — Child Health in Africa  M
  DAAS 365 — Global Gender Health Reproduction  S,M
  DAAS 408 — Health and Environment in Africa  M
  DAAS 432 — Violent Environments  S,T
  DAAS 443 — Race, Gender & Health  M
  DAAS 457 — Africa-China Environmental Development  T
  DAAS 458,012 — Health and African Development  S,M
  DAAS 458,028 — Cultural Aspects of Health and Illness  M
  DAAS 462 — Globalization and African Health  M
  DAAS 495 — AIDS in Africa  M

- American Culture
  AC 202 — Digital Cultures  T
  AC 203 — Genes and Society: A Global View  S,M
  AC 206 — AIDS and America  M, S
  AC 233 — Genes and Society: Comparative and International Perspectives  M. Stern
  AC 239 — Gender, Sexuality, and Health in America  . M.S
  AC 241 — Health, Biology, and Society: What is Cancer?  M. Stern
  AC 284 — Sickness and Health  M Pernick
  AC 301.001 — Sex and Gender in America  S
  AC 301.005 — Digital Maps and Activism  T
  AC 333 — Green Indigeneity  S
  AC 331 — Health in America: Patterns, Experience  M
  AC 334 — Race and Video Games  T
  AC 546 — Media Matter  T Whitney
  AC 365 — AIDS and America  M Meisher
  AC 410 — Ethics and Info Technology  T Conway
  AC 498 — Surveillance in Society  S

- Anthropology
  Anthrobo 167 — Evolution of Environmental Global Health  S,M Strassmann
  Anthrobo 342 — Nature/Culture Now! S.T Bigham, Roberts
  Anthrobo 363 — Genes, Disease, Culture  S,M Bigham
  Anthrobo 371 — Techniques in BioAnthro  S.T. Wolsoff
  Anthrobo 469 — Disease, Culture & Human Genetics  M
  Anthrocol 212 — Global AIDS Epidemic  M
  Anthrocol 254 — Anthropology of Food  S.T
  Anthrocol 256 — Culture, Adaptation and Environment  S.T Har din
  Anthrocol 258 — Culture and Medicine (Honors only)  S,M Peters-Golden
  Anthrocol 298 — The Surgical Body  M
  Anthrocol 325 — Childbirth and Culture  S,M
  Anthrocol 327 — Medicine & Healing  M Roberts
  Anthrocol 342 — Nature/Culture Now! S.T Bigham, Roberts
  Anthrocol 344 — Medical Anthropology  S,M Peters-Golden
  Anthrocol 352 — Anthropology of the Body  S Fehervary
  Anthrocol 354 — Art, Science & Technology  S.T Robertson
  Anthrocol 351 — Health and Illness in African Worlds  M
  Anthrocol 356 — Anthropology of Mental Health  M
  Anthrocol 357 — Art, Science and Technology: Human Body as Spectacle  S.T Robertson
  Anthrocol 408 — Maternal/Child Health and Environmental Pollution in Africa  S,M
  Anthrocol 440 — Environmental Anthro  S
  Anthrocol 458.003 — The Anthropology of Infectious Disease  S,M Dumes
  Anthrocol 458.004 — Traditions and Directions of Psychiatric Anthropology  S,M
- **Asian Studies**
  - AS 365 — Doctors in the Ancient World  S,M
  - AS 370 — Acupuncture History  M
  - AS 480.001 — New Media and Asian Societies  T

- **Biology**
  - Biol101 — Energy, Food, Environmental Justice  S
  - Biol109 — Ecological Knowledge and Environmental Problem Solving  S
  - Biol110 — Global Change: Sustainable Science  S
  - Biol112 — The Evolutionary Influence of Humans  S
  - Biol118 — AIDS and Other Health Crises  M
  - Biol120 — Mysterious Minds: Biological and Social Aspects of Brain Disorders  S, M
  - Biol121.002/212 — Plants and Human Conflict  S,T
  - Bio 121.004 — Science, Reason, and Nonsense  S
  - Biol120 — Ecology and the Evolution of Medicine  S
  - Biol125 — Biotechnology and Society  S,T
  - Biol144 — Genetics in Society  M, S Denef
  - Biol197 — Science Writing  S, M
  - Biol 212 — Plants & Human Health  S, M
  - Biol 241 Health, Biology & Society  M, S Stern, Olsen

- **Chemistry**
  - 105 — Our Changing Atmosphere  S, T Flanner
  - 120 — The Business of Chemistry and Biology  S, T Glick
  - 120,002 — First Year Seminar: Chemistry, Science and Society  S, T

- **Classic Civilizations**
  - CLCIV 125 — Science and Religion in Athens  S
  - CLCIV 277 — Environmental History of the Ancient Mediterranean  S Haug
  - CLCIV 339 — Doctors in the Ancient World  M
  - CLCIV 392 — Ancient Medicine  M

- **Climate and Space Sciences & Engineering (formerly AOSS)**
  - CLIMATE 102 — Extreme Weather  S
  - CLIMATE 105 — Changing Atmosphere  S
  - CLIMATE 140 — Climate and the Media  S
  - AOSS 171 — Global Change: Sustainability Science  S
  - AOSS 172 — Global Change: Sustainability Challenges  S
  - AOSS 300 — Global Environmental Impact of Technological Change  S,T
  - CLIMATE 480 — Climate Change in Action  S

- **Communications**
  - Comm 271 — Communication Revolutions  S, T Valiant
  - Comm 281 — Media Psychology  S, T Dal Cin
  - Comm 313 — Behind the Digital Screen  T Sandvig
  - Comm 334 — Race, Gender, and Video Games  T
  - Comm 361 — Media in Public Affairs  T
  - Comm 362 — Digital Media Foundations  T
  - Comm 371 — Media, Culture & Society  T Cote
  - Comm 381 — Mass Media & Individual  T, S
  - Comm 405 — Healthscapes  M, T Merid
  - Comm 406 — Marketing Social Change  T
  - Comm 413 — Environmental Communication  S Hart
  - Comm 421 — Media Law and Policy  T, S Barr
  - Comm 422 — Social Media and Politics  T
  - Comm 423 — Computer-mediated Communications  T
  - Comm 424 — Race, Gender & New Media  T
  - Comm 425 — Internet, Society & the Law  T, S Barr
  - Comm 428 — Gender, Media & Law  T, S Barr
  - Comm 453 — US Media History  T
  - Comm 454 — Media Economics  S
  - Comm 458 — History of Media and Technology  T
  - Comm 460 — History, Technology and Culture  T
  - Comm 464 — The Social Consequences of Mobile Communications  T
  - Comm 465 — Health Communication and Health Behavior Change  T, M Dal Cin
- **Comparative Literature**
  CompLit 122.001 — Writing on Technology; Writing as Technology  T

- **Complex Systems Program**
  CMPLXSYS 250 — Social Systems, Energy, and Public Policy  S, T

- **Earth and Environment**
  Earth 102 — Energy from Earth  S Becker
  Earth 108 — When Earth Attacks  S Hetland
  Earth 109 — Water and Society  S Cruz Da Silva Castro
  Earth 110 — Evolving Oceans (minicourse)  S Amaboldi
  Earth 111 — Climate & Humankind (minicourse)  S Levin
  Earth 114 — Global Warming  S Gleason
  Earth 122 — Extreme Weather  S
  Earth 140 — Climate and the Media  S Basis
  Earth 158 — Environmental Impact: Energy  S, T
  Earth 159 — Sustainable Futures  S, T
  Earth 171 — Global Change: Sustainability Science  S Kling
  **Earth 172 — Global Change: Sustainability Challenges  S Amaboldi**
  Earth 238 — A History of Everything  S, T
  Earth 262 — Plants and People  S, T Smith
  Earth 277 — Water in the 21st Century  S, T Cruz Da Silva Castro
  Earth 331 — Climate and Climate Change  S Passey
  Earth 333 — Inexhaustible Seas?  S Hendy
  Earth 380 — Mineral Resources, Economy & Environment  S, T

- **Economics**
  Econ 370 — Environmental and Resource Economics  S Dudley
  Econ 437 — Energy Economics and Policy  S McRae

- **Ecology and Evolutionary Biology**
  EEB 315 — Ecology & Evolution of Infectious Disease  S, M
  EEB 318 — Food, Land, and Society  S, T
  EEB 492 — Behavioral Ecology  S
  EEB 498 — Ecology of Agroecosystems  S
  **EEB 499 — Research Ethics in Biology  S, M**

- **Engineering**
  Engin 100.350-358 — Human Power Generation  T
  100.200 — Design in the Real World  T
  100.351-400 — Engineering Solutions Global Water  S, T
  100.401-500 — Solar Power: Renewable Energy  S, T
  100.450 — Green Energy: Harness the Wind  S, T DeRoo, Hohnson
  100.501-504 — Biotech and Human Values  T
  100.550 — Urban Mobility  S, T Rohan, Hortop
  100.800-806 — Engineers Making a Difference  T
  260 — Engineering Across Cultures  T
  450 — Global Health Design  T
  **CEE 200 — Intro to Civil and Environmental Engineering  S, T Semrau**
  CEE 230 — Thermodynamics and the Environment  T
  CEE 265 — Sustainable Engineering Principles  T Menassa
  CEE 307 — Sustainable Cities  T, S Semrau
  ESENG 499 Sustainable Engineering & Design  T

- **English Language and Literature**
  English 125.060 — Science and the Humanities  S, T, M
  English 225.099 — Science and Society  S
  **English 280 — Digital Culture  S Hu, Gold**
English 290 — American Environments; History, Thinking, Representation S
English 313 — The Darwinian Revolution S
English 317 — Green Indigeneities S
English 319 — Literature of Climate Change S
English 320 — Environmental Imagination S
English 328 — Writing and Environment: Nature and Culture S
English 342 — Science Fiction S
English 416 — Disability Cultures M
English 420 — Technology and the Humanities T

- Environmental Science and Engineering

Ensci 105 — Our Changing Atmosphere S Flanner
Ensci 109 — Water and Society S Cruz Da Silva Castro
Ensci 114 — Global Warming S Gleason
Ensci 122 — Extreme Weather S Samson
Ensci 171 — Global Change: Sustainability Science S
Ensci 172 — Global Change: Sustainability Challenges S

- Program in the Environment

Environ 101 — Energy, Food, Environmental Justice S,T
Environ 102 — Extreme Weather S
Environ 105 — Our Changing Atmosphere S De Roo
Environ 110 — Global Change: Sustainability Science S
Environ 111 — Global Change: Sustainability Challenges S,T Amableldi
Environ 129 — FYS: Environment, Health, Well-being S,T
Environ 144 — Climate and Humans S
Environ 167 — Evolution of Environmental Global Health S Strassmann
Environ 201 — Ecological Issues S
Environ 207 — Sustainability and Society S
Environ 208 — Business and the Natural Environment S Soderstrom
Environ 211 — Social Science and Environmental Problems S
Environ 221 — Global Environmental History S
Environ 222 — Introduction to Environmental Justice S
Environ 223 — Garbage in the Modern World T
Environ 224 — Global Nuclear Proliferation T
Environ 235 — Economics of Natural Resources and Environment S Stolper
Environ 237 — Global Environmental History S Selcer
Environ 238 — A History of Everything S Givelou, Givelou
Environ 240 — Environmental Ethics S
Environ 242 — 2.5 Billion Yrs Human Food and Foodways S, T
Environ 244 — Intro to Environmental History S Ensor
Environ 250 — Social Systems, Energy, and Public Policy T
Environ 256 — Culture, Adaptation, and Environment S Hardin
Environ 262 — Plants and People S,T Smith
Environ 263 — Energy and Environment S,T
Environ 270 — Our Common Future S
Envrir 277 — Environmental History of the Ancient Mediterranean S Haug
Environ 290 — Food S
Environ 301 — Nature, Culture, Landscape S
Environ 302 — Topics in Environmental Social Science (See all!) S
Environ 303 — Tropical Conservation and Ecology S
Environ 304 — Environment History of the U.S. S
Environ 305 — Food Literacy S,T
Environ 306 — Global Water S
Environ 308 — Sustainability and Health S, T
Environ 310 — Toxicology; Environmental Chemicals and Disease S Loch-Caruso
Environ 312 — Environ Politics and Policy S,T
Environ 315 — Environment and Development: Dilemmas of Power and Place in a Global World S
Environ 318 — Food, Land and Society S
Environ 320 — Environmental Journalism S,T Askari, Halpert
Environ 321 — Climate Adaptation S
Environ 324 — Introduction to Water Law and Policy S Coyle
Environ 333 — Inexhaustible Sea? S Hendy
Environ 335 — Introduction to Environmental Politics S
Environ 350 — The Built Environment: Introduction to Landscape Change S, T D’Anieri
Environ 356 — Environmental History S
Environ 360 — Behavior and Environment S
Environ 361 — Psychology of Environmental Stewardship S De Young
Environ 365 — International Environmental Policy S Coyle
Environ 367 — Global Enterprise and Sustainable Development S
Environ 375 — Environmental and Resource Economics  S Dudley

**Environmental Ethics** S,T Bouma
Environ 377 — Literature and Environment: Southern Natures  S
Environ 385 — Environmental History of China  T
Environ 390 — Environmental Activist  S

**Sustainable Campus** S Soderstrom
Environ 401 — Modelling Human-Natural Systems  S

**Sustainable Cities** S,T
Environ 408 — Landuse Policy, Law and the Environment  S,T
Environ 410 — Environment and the West  S
Environ 412 — Environmental Values in Public Policy  S RS
Environ 415 — Behavioral Ecology and Conservation Biology  S

**Violent Environments: Oil. T Adunbi**

**China and Environment and Politics of Development in Africa** T

**Oil & Gas Policy in the US** S,T Raiml

**Environmental Law** S Churchill
Environ 480 — Climate Change Action  S
Environ 490 — War and Environment  T

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**German**

Ger 326 — Germany and the Environment  S,T

Ger 346 — Media Matters T Whitney

Ger 378 — Topics in the History of German Science  S,T

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**History**

History 102 — A History of the Present: Climate Change, Nuclear Power, and Energy Futures, post-Fukushima  S,T M
History 104 — History, Science, and Politics in the Anthropocene  S,T Edwards, Hecht
History 196 — Epidemics: Deadly Disease in American History  M,S
History 196 — North American Environmental History  S
History 196 — History of the Human Sciences  S
History 215 — Catastrophe: A History of Disaster  S,T
History 222 — Global Environmental History  S
History 223 — Garbage in the Modern World  T
History 224 — Global Nuclear Proliferation  S,T
History 230,002 — History of Psychology  S,M

**Histories of Human Experimentation** M Howell
History 232,001 — Histories of Global Health  M Ko
History 232,003 — Technology and Power in Africa  T

**Sexually Transmitted Diseases from Syphilis to AIDS** M Kazanjian
History 234 — Medicine in the Western World from the 18th c. to the present  M
History 236 — Environment and History in Preindustrial Europe T Squatriti

**Global Environmental History** S,T Selcer
History 238 — A History of Everything  S,T Deloria, Gibelyou
History 277 — Environmental History of the Ancient Mediterranean  S Haug
History 284 — Sickness and Health in Society: 1492 to the Present  M Pernick
History 285 — Science, Technology, Medicine and Society  S,T M Carson
History 292 — Ancient Medicine  S,M Das
History 310 — Globalization in History  T
History 328,010 — Environmental History of the U.S.  S,T Deloria
History 329 — Computers and the Internet: A Global History  T Edwards
History 339 — Doctors in the Ancient World  S
History 355 — Health and Illness in African Worlds  M
History 356 — Health in America  M

**Epidemics: Plagues & Cultures from Black Death to the Present** M Pernick
History 379 — The History of Computers  T
History 385 — The Environmental History of China  S,T Cassel
History 399,006 — Blood, Oil & Water in Ancient History  T
History 399,007 — Digital Futures of History  T
History 392 — Doing Environmental History in Japan  S Pincus
History 407 — The Conquest of Nature  T Selcer
History 472 — Technology and Modernity in the Pacific  S,T
History 496,001 — Science, Technology, and War  S, T
History 496 — History Colloquium: Health and Medicine in US Culture since 1875  M
History 497 — Human Nature and its Sciences  S
History 497 — Health and Medicine in US Culture since 1875  S,M
History 497 — Climate Change in History  S
History 497 — Histories of Nature and the Environment: Japan in the World  S,T

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**History of Art**

https://lsa.umich.edu/sts/undergraduates/approved-courses.html
- **Honors**

  - Honors 135.001 — Psychology of Nature  S Kolenda
  - Honors 135.004 — Water Policy  S Carrillo-Ostrow
  - **Honors 230.010-17 — History of Human Experimentation  M Howell**
  - Honors 232 — Biology and Society  S
  - Honors 250.002 — The Evolution of Cognition  S
  - Honors 250.004 — Science and the Study of Human Perception  S
  - Honors 365 — Cyberscience  S

- **International and Comparative Studies (CICS, INTLSTD)**

  - CICS 401 Global Mental Health  M
  - INTLSTD 301 Concepts in Global Health  S
  - INTLSTD 387.001 Implementation Solutions for Global Health Equity  M Meraver
  - INTLSTD 378.010 Ebola and Histories of Global Health  M Hunt
  - INTLSTD 401.007 The Conquest of Nature  T

- **Near Eastern Studies**

  - NES 278 Zoom: A History of Everything  S,T
  - NES 490 Science and Society in the Modern Middle East  S,T,M

- **Philosophy**

  - Phil 155 — The Nature of Science  S
  - Phil 240 — Environmental Ethics  S
  - **Phil 298 — Bioethics  S**
  - Phil 320 — Worldview of Modern Science  S
  - Phil 322 — Methods of Science  S
  - Phil 340 — Minds and Machines  S,T
  - Phil 356 — Issues in Bioethics  S,M
  - **Phil 376 — Environmental Ethics  S**
  - Phil 381 — Science and Objectivity  S
  - Phil 420 — Philosophy of Science  S
  - Phil 424 — Philosophy of Quantum Mechanics  S
  - Phil 425 — Philosophy of Biology  S
  - Phil 464 — The Scientific Revolution  S

- **Physics**

  - **Physics 106 — Everyday Physics  S,T**
  - Physics 210 — Energy for Our Future  S,T
  - Physics 365 — Cyberscience  S,T
  - **Physics 481 — Science, Technology & Public Policy  S,T Walsh**

- **Political Science**

  - Polsci 336 — Energy Politics  S JUWR
  - Polsci 380 — Environmental Politics and Policy  S,T
  - Polsci 497 — Politics of Energy in the Developing World  S,T

- **Psychology**

  - **Psych 112 — Psychology as a Natural Science  S,M Malley**
  - Psych 121 — Gender, Sex and Sexuality in Science and Medicine  S,M
  - **Psych 211.004 — Project Outreach: Health, Illness and Society  M**
  - Psych 291 — Women and Gender  M
  - Psych 359 — The Psychology of Aging  M
  - Psych 360 — Behavior and Environment  S
  - Psych 362 — Psychology of Environmental Stewardship  S
  - Psych 401 — Health Psychology  M
  - **Psych 413 — A History of Modern Psychology  M**
  - Psych 414 — Sexuality and Science  S,M
  - Psych 437 — Pavlov and Society  S
  - Psych 442 — Perception, Science and Reality  S
  - Psych 477 — Culture & Mental Health in Psychology  M
  - Psych 477.003 — Mental Health and Culture: National and International Perspectives  M

https://lsa.umich.edu/sts/undergraduates/approved-courses.html
- **Public Health**
  - PubHlth 200 — Healthy & Society: Introduction to Public Health M
  - PubHlth 305 — Environment and Human Health M
  - PubHlth 350 — Global Public Health M
  - PubHlth 381 — Public Health Systems M
  - PubHlth 403 — Obesity: Cells, Society M

- **Public Policy**
  - PubPol 210 — Health and Society: Intro to Public Health S,M
  - PubPol 224 — Global Nuclear Proliferation S,T
  - PubPol 250 — Social Systems, Energy and Public Policy S,T
  - PubPol 312 — Environmental Politics in Policy S,T
  - PubPol 412 — Environmental Values in Public Policy S,T
  - PubPol 468 — Oil & Gas Policy in the US S, T Raini
  - PubPol 475.312 — Imagining the Global Environment: History, Science, Policy S, T
  - PubPol 481 — Science, Technology & Public Policy S,T Walsh
  - PubPol 519 — Sustainable Energy Systems S,T

- **Residential College**
  - RCCORE 100 — Medicine and Health, East & West S,M
  - RCIDIV 302 — Special topics in Science, Technology, Medicine and Society S,T,M
  - RCIDIV 305 — Environment and Social Justice Literature S,T
  - RCIDIV 318 — Food, Land, and Society S RS
  - RCIDIV 350 — PILS, Politics and the Public Good (minicourse) M
  - RCIDIV 351 — Ethics, Politics, and the Pharmaceutical Industry M RS
  - RCNSCI 202 — Ecological Issues S
  - RCNSCI 260 — Science and Social Issues: Mind, Medicine & the Arts M, S
  - RCNSCI 419 — Sustainable Energy Systems S,T
  - RCNSCI 263 — Energy and the Environment S,T
  - RCSSCI 275 — Science, Technology, Medicine and Society S,T,M
  - RCSSCI 327 — Critical Theory in Medicine & Healing M
  - RCSSCI 360.009 — Knowing Climate Change: Diverse Environmental Epistemologies for a Warming World S,T
  - RCSSCI 360.003 — Art, Mind, and Medicine S, M

- **School of Information**
  - SI 106 — Programming, Information & People T
  - SI 110 — Introduction to Information Studies T
  - SI 310 — Information Environments & Work T
  - SI 334 — Persuade and Social Influence T
  - SI 335 — Social Media in Organizations T
  - SI 365 — Cyberscience T
  - SI 379 — History of Computers and the Internet T
  - SI 410 — Ethics and Information Technology T
  - SI 428 — Online Communities T
  - SI 430 — IT & Global Society T
  - SI 446 — Personal Privacy: Policy, Practice and Technology Issues T
  - SI 514 — Digital Humanities: Debates & Techniques T

- **Screen Arts and Cultures**
  - SAC 202 — Digital Culture T
  - SAC 346 — Media Matter T Whitney
  - SAC 334 — Race, Gender, and Video Games T
  - SAC 368 — Mobile Media Cultures T

- **Sociology**
  - Soc 230 — Health Population in S, Africa S,M
  - Soc 270 — Gender and the Law S, M
  - Soc 302 — Intro to Sociology; Health & Society M
  - Soc 345 — Sociology of Sexuality S,M
  - Soc 380 — Environmental Public Opinion Analysis S,T
  - Soc 445 — Diagnosis, Sex, and Society S,M
  - Soc 447 — Sociology of Gender S
- University Course

**ALA 109** -- Perspectives on Healthcare  M

**UC 105** -- Digital Research  T

**UC 109** -- Programming, Information & People  T

**UC 110** -- Intro to Information Studies  T

**UC 150.001** -- Patient-Physician Stories  M

**UC 150.002** -- Philosophy of Medicine  M

**UC 151** -- Epidemics: Past, Present & Future  M

**UC 151** -- Medical Ethics: At the Bedside  M

**UC 152.001** -- Microbiome and the Media  M,T

**UC 152** -- Survey of Nutrition and Cancer in International Perspective  M

**UC 154.001** -- US Medicine, Arrowsmith-Obama  M

**UC 154.002** -- Global Health Equity: Principles M

**UC 154.001** -- Health and Happiness: Exploring the Science  M, S

**UC 163** -- Biotechnology and Human Values  M,T

**UC 210** -- Careers in Medicine and Health Care  M

**UC 250.003** -- Critical Issues in Health  M

**UC 250.004** -- Critical Issues Sustainability  T

**UC 252** -- Diagnosis of Human Diseases  M

**UC 254.001** -- Obesity: Science, Culture and Politics of  M

**UC 256** -- 22 Ways to Think About New Media  T

**UC 270** -- Health Career Observations  M

**UC 370.001** -- Food Studies Research  S

- Urban Planning

**UP 263** -- Energy and Environment  S,T

**UP 357** -- Architecture, Sustainability and the City  S,T

**UP 408** -- Foundations of Sustainable Food Systems  S,T

**UP 423** -- Intro to Urban and Environmental Planning  S,T

- Women’s Studies

**WS 119** -- Gender, Sex, and Sexuality in Science and Medicine  S, M

**WS 212** -- Global AIDS Epidemic  M

**WS 220** -- Perspectives in Women's Health  M

**WS 223** -- Psychology of Human Sexuality  M

**WS 233** -- Genes and Society  M

**WS 239** -- Gender, Sexuality, and Health in America  S, M

**WS 253** -- Gender, Sex, Sexuality in Science and Medicine  M

**WS 257** -- Sex, Sexuality and Public Policy  S

**WS 270** -- Gender & the Law  S,M

**WS 281** -- Psychology of Women and Gender  S

**WS 300** -- Men's Health  M

**WS 307** -- Critical Theory in Medicine and Healing  M

**WS 324** -- Childbirth and Culture  M

**WS 328** -- Women, Agency, and Safe Sex  M

**WS 331** -- Theory of Gender and Health  M

**WS 342** -- Sexual Health and Clinical Science  S, M van Anders

**WS 342** -- Histories of Women, Medicine and Reproduction  M Simmons

**WS 348** -- Sociology of Sexuality  M,S

**WS 356** -- Health in America  M

**WS 365** -- Global Perspectives on Gender, Health, and Reproduction  S, M

**WS 400** -- Reproductive Health  M

**WS 402** -- Gender & Health Policy  M

**WS 405** -- Pharma, Pills, Policy  M

**WS 410** -- Reproductive Justice  M

**WS 432** -- Race, Gender, Mental Health in the 19th C  M

**WS 436** -- Gender, Health and Well-being in Africa  M

**WS 443** -- Race, Gender & Health  M

**WS 447** -- Sociology of Gender  S,M

**WS 452** -- Sexuality and Science  S,M
WS 449 — iagnosis, Sex & Society  M
WS 482 — Gender, Drugs & Health  M
WS 485 — Gender, Mentoring, and Technology  T